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THE JOURNAL OF
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VOL. XIV. FEBRUARY, 1920 NUMBER 6

ORIGINAL ARTICLES

A SUBCONSCIOUS PHENOMENON

BY CHARLES E. CORY, PH.D.

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IN HIS essay on Dreams, Henri Bergson makes the statement that the great discoveries of the last century were in the physical order, and that those of the twentieth century will probably be in the realm of the subconscious. Studies made in this field during the decade just past support the belief that it promises to reveal facts that will be, at least, as significant as those that await our attention in the physical world. And if, as I believe, there are many signs and indications that we are approaching a great world-wide humanistic movement, this growing insight into the tendencies and forms of human nature that lie below the level of consciousness will occupy a large space in that vital psychology which is yet to be written. We are beginning to see that beyond the borders of consciousness there is a vast hinterland in the depths of which are to be found forces and influences that are indispensable if the narrow strip that is exposed to consciousness is made intelligible. Into it we have gone far enough to know that it contains the springs of creative activity, and also pools of stagnant water; in it are the sources of power, and also the breeding places of disease and confusion. And we have gone far enough to have every reason to believe that whatever may be discovered in this obscure region will fall under the principles of science, even though they may conflict with some of its dogma.

The case described below is, indeed, only a modest contribution to the rapidly growing mass of data bearing upon the problem of the subconscious. Automatic writing is now common enough, and

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this phenomenon is, in general, of the same character. It has, however, some novelty, and will be, I believe, of some value to students in this general field.

About eight years ago Miss Mazie Fitzroy of St. Louis, while attempting to draw the face of a nephew who had recently died, discovered that her hand and arm were moving without her control. Being curious, she permitted the drawing to proceed. The result was a face, but one that bore no resemblance to that of the nephew. Since that time a large collection of drawings have been made.

Miss Fitzroy is a woman of fifty years of age, one of five children, all living. She has never married. Her father died when she was twenty; her mother is living. On neither side has anything been found of significance. Miss Fitzroy is, and has been for years, rather delicate in health. She has never, however, had any serious illness, and aside from a gradual impairment of her hearing she has no organic trouble. As a child she was unusually fanciful and this psychological trait has continued through her adult life. Her imagination reaches a vividness that approaches hallucination, and the imagery is visual. From childhood she has been a constant reader, and much of her pleasure in reading, she says, is due to the rich imagery that flowers out in her consciousness. This spontaneity of imagery has, of course, a direct bearing upon the drawings, and has been studied with some care. In the form that it takes it indicates a tendency toward dissociation, a weakness in the mind's correlating function. Music, Miss Fitzroy is a trained musician, also produces this marked visual imagery. And upon three different occasions elaborate hallucinations have been experienced. These hallucinations appeared at wide intervals, and at times when there was some emotional strain. They, together with the unusual character of the imagination, show conclusively that dissociation lies near the surface.

Two additional facts, when coupled with those already mentioned, are not without significance. The subject is a woman of strong feeling, and also extremely reserved in the expression of those feelings. This natural reserve has provided a complete and systematic repression of her emotional life, and this constant inhibition has had, to my mind, much to do in producing a general condition that underlies the specific phenomenon under consideration; it is a factor without which the phenomenon would, in all probability, not have occurred. Further, this natural reserve has been intensified by the loss of hearing. At the age of twenty her hearing began to fail (a sis-

ter has also had the same experience), and this, as is not infrequently the case, has turned her life inward, making it more subjective and increasing its natural insulation. A double repression has, then, thus been built up, and back of it there is a quick and strong current of feeling, one which has been fed by much reading and contact with art. For some time music was an outlet, but with the loss of hearing it was discontinued.

So much for a general statement of the case. It gives a significant background. With the aid of hypnosis a more minute analysis could have been, no doubt, obtained, but such means were not agreeable to the subject.

A word now regarding the drawings. Many of them have, in the judgment of professional critics, considerable artistic merit. They generally require from six to ten minutes. Occasionally nothing is drawn. Generally, however, the drawing starts immediately. What the drawing will be is, Miss Fitzroy asserts, unknown to her. And that this is a statement of fact I have not the slightest doubt. An examination of the arm during the drawing shows that a degree of anesthesia exists, and if the drawing is prolonged a pronounced numbness sets in. This fact confirms the automatic character of the performance. Upon one occasion, when attempting to draw blindfolded, the numbness spread over the whole organism. It should be added that Miss Fitzroy is perfectly innocent of any theory or explanation of what takes place. At no point does one uncover motives for imposture, and as one gets a more intimate acquaintance with the whole situation the question of genuineness is put aside. When drawing, the subject goes into no trance. Aside from the modifications already noted nothing abnormal is observable. It is more than probable, however, that in taking the drawing posture some degree of abstraction is produced. Continuous and absorbed conversation may be carried on without any apparent influence on the movement of the hand. The technique used is full of all kinds of caprice. Many of the earlier drawings were signed with initials. These were not written, as would ordinarily be done, but the space forming the letters was left when the dark background was filled in. When the picture is finished the hand makes a wide flourish, and the pencil falls; a vague sense of release is also reported to be felt at its completion.

An interesting thing sometimes occurs during the drawing. If the pencil is worn on one side Miss Fitzroy describes it as turning in her hand. She says she has a keen sense of its being turned in

spite of every effort to the contrary. What takes place is, of course, that two sets of impulses are expressing themselves in her hand, the subconscious impulses turning the pencil against movements initiated by consciousness. The fact that only the resisting group of impulses is identified with consciousness would produce the feeling that a foreign force was operative. The experience described by Miss Fitzroy calls to mind the "water-witch," and the explanation of the one will also do for the other. And, in passing, I may say that it would be interesting to study adepts with the forked stick for other signs of dissociation, which, so far as I know, has not been done.

I have said that art critics find many of the drawings to possess real merit. There is a subtle shading of expression, a delicate sketching of character in most of them. The faces are distinctly not modern. In but few is there more than the head or bust. There seems to be no sexual preference. This does not, of course, exclude the possibility that one of the many casual factors that lie at the roots of the matter may have been of a sex character. What weight, if any, to give to this possibility the data so far secured affords no means of answering. Many of the faces drawn are those of children. These may appear either singly or in groups, and occasionally several faces may be found dimly sketched in the background.

None of the drawings, according to Miss Fitzroy, resemble in any way people she has known, and, as I have said, they seem to me decidedly not modern. However, as an art student for many years she was constantly exposed to impressions that could easily provide the various types of faces portrayed. The general source of the material is, thus, not far to seek. A careful comparative study of the faces with works of the earlier artists might determine the question of source more definitely, and should such a study reveal any striking or close resemblance this fact would have some psychological value. Just such an effort will shortly be made by a well-known St. Louis artist. This much seems certain, that it was in the early period of her life that these impressions were received. And, being at that time a student of art (in particular drawing), the atmosphere of the gallery and studio would produce a receptivity not elsewhere experienced, a sensitive condition which no where else existed. Then, too, the contact with the world of art and literature has always been for the subject more vital and free than has been her contact with the actual world of fact and its people, *and only where the mind is free is it receptive.*

Not far below the surface, it would seem, there exists, in dream-like fashion, a stratum of imagery that under certain conditions, that is, a formal abstraction produced by the posture of drawing, is enabled to find its way out in appropriate movements. The abstraction defocalizes the nervous system sufficiently to permit the dissociated complex the use of the arm and hand. The complex may have existed before the act of drawing, or it may have been engendered by or with the complete drawing process. Just which statement describes the facts will depend, it seems to me, upon how far dissociation has progressed, or to what degree the self has been disintegrated, and this cannot be determined from without. The data at hand leaves the question open as to whether the cleft is slight or profound.

The fact that the drawings have considerable merit is not surprising when it is remembered that Miss Fitzroy has had a somewhat extended training in art. Their psychological value is, of course, not affected by this information. That value consists in the fact that they are subconscious productions. For some time we have been raising the question as to just what the subconscious mind can accomplish. What degree of ideation or coordination of movements is it capable of? These drawings have their value in so far as they throw some light upon the answer to this question, a question that is pressing into the center of the field of all vital psychological discussion. Art, it has been assumed, is an expression of mind in one of its highest functions. It is at the extreme remove from the sporadic and the mechanical. Beauty, said Plato, is the most difficult thing in the world. It is the very embodiment of idea. And yet here we have subconscious processes very credibly performing this same feat.

If it were possible to put out an inexpensive edition of reproductions of these drawings it would provide excellent illustrative material for those interested in presenting the general subject of subconscious phenomena.

A SYSTEM FOR EXPLAINING AFFECTIVE PHENOMENA

BY LEONARD THOMPSON TROLAND

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I

THE following is a brief outline of a general view of the psychophysiology of affective phenomena which I have developed in connection with my classes during a number of years. It presents, I believe, some really novel features, but its principal merit lies in the manner in which it combines not only a large number of facts but also many theories with which we are already familiar.[1]

II

The data of modern introspective psychology permit us to define a variable, which we may call *affective intensity*, as an algebraic quantity positive magnitudes of which are to be identified with the degrees of pleasantness of conscious states, while negative magnitudes represent the degrees of unpleasantness of such states. A zero value stands for indifference. This quantitative conception is supposed to be capable of formulating any possible affective value in consciousness regardless of the nature of the consciousness in respects other than the affective.

Various hypotheses have been advanced as to the identity of the physiological factor which is correlated with affective intensity as above defined. The exact nature of any such hypotheses must depend upon the general theory of the physiological basis of consciousness as a whole which is accepted. The view which I shall adopt is the traditional one that the entire introspective experience of any individual depends upon the nerve processes taking place in a limited portion of his cerebral cortex. We know that the cerebral cortex is mainly composed of gray matter, the dominant functions of which

[1]Among such theories should be mentioned in particular that of Max Meyer, which in mathematical form is very similar to the one which I outline in this paper. The difference between the two theories, however, appears to me of essential significance, since the consequences to be drawn from the statement here offered are very much broader than those of Meyer's theory, although they include the latter. I am uncertain to what extent I am indebted to Meyer's theory in the development of my present views.

undoubtedly lie in the so-called *synapses*. It would, therefore, seem pertinent to look for the physiological basis of affection in some synaptic process.

Many facts of nerve physiology indicate that the inherent characteristics of any nervous arc which determine its specific activity are located in its synapses. It is at synapses that specific nerve connections are established and the exact characteristics of the nerve conduction process are regulated. The most important conception relating to the properties of the synapse appears at the present time to be that of its *resistance* to the passage of a nerve current. Upon the magnitude of the synaptic resistance depends the ease with which a given afferent current passes over into any efferent path, and it is therefore probable that the specific nature of the motor reaction to a given sensory stimulus depends upon the exact distribution of synaptic resistances in the central nervous system.

For our present purposes it will be more convenient to speak of synaptic *conductance* than of the corresponding resistance, the conductance being the reciprocal of the resistance. The fundamental assumption of the theory which we have to consider in the present article may be expressed as follows: *The affective intensity of any individual consciousness is proportional to the average rate of change of conductance in the synapses the activities of which are responsible for that consciousness.* This postulate may be expressed mathematically. If c is the average conductance of the synapses and a is the affective intensity, then:

$$(1) \qquad a = k\frac{dc}{dt},$$

k being a constant, and $\frac{dc}{dt}$ being the usual expression for the rate of change of c with respect to the time t.

It is perhaps necessary to point out that a rate of change, like affective intensity, is an *algebraic* variable, of such a character that a decreasing conductance will mean a negative rate and an increasing conductance a positive rate while absence of all change will yield a rate of zero. Accordingly, increasing conductance implies positive affective intensity or pleasantness, while decreasing conductance must involve negative affective intensity or unpleasantness. No change in conductance will entail zero affective intensity, or a state of indifference. It is clear that the absolute level of the conductance, whether high or low, does not enter into the relationship at all.

III

In order to develop the implications of the hypothesis above advanced regarding the physiological basis of conscious affection it is necessary to know under what conditions the conductance of cortical synapses changes. It should be borne clearly in mind that, since we have supposed the introspective consciousness to depend upon the cortical process and directly upon this alone, the activity of other portions of the nervous system can influence consciousness only *indirectly*, through the medium of the cortex. However, it is probable that all cortical processes are dependent upon other nerve processes occurring outside of the cortex, so that it is to the relation between subcortical and cortical activities that we must next direct our attention. It is obvious that as regards affection the problem is that of the external causes of changes in the conductance of cortical synapses.

The most familiar condition under which an increase in the conductance of a synapse occurs is that of simple *exercise*. The mere passage of a nerve current through a synapse is commonly supposed to break down its resistance and thus to render it more conductive for subsequent similar currents. This process, however, follows a law of diminishing returns, a maximum conductance finally being reached which represents the physiological limit of the increase. This corresponds with the familiar "learning curve." In the human being nearly all learning is cortical and intimately related with consciousness, so that we should expect this condition of increase in synaptic conductance to be an important one to the theory of conscious affection.

The affection in question, in accordance with our fundamental assumption, would of course be positive or one of pleasantness. The pleasantness thus conditioned is to be identified with that of *novel experiences*. We know from everyday life that pleasantness which is attributable merely to novelty quickly wears off with repetition of the original stimulus, a fact which is in harmony with the asymptotic form of the learning curve and the demands of our theory. The importance of the principle of novelty as a source of pleasure in human life is undeniably very great, so that this development of our theory will probably be found to cover a wide range of affective phenomena, involving all departments of sensation and also processes of imagination, association, thought, etc.

The opening up of synapses by the law of exercise is due to the action of afferent nerve currents upon the cortex. A study of the

subject indicates, however, that not all afferent currents act upon the cortical synapses in the same manner. Some of these currents, instead of increasing cortical conductance, apparently decrease it, at least along certain lines of conduction. These afferent currents are the ones which arise in those sense organs which Sherrington calls *nociceptors*. The most important nociceptive system is the so-called pain sense, which is stimulated through the free nerve endings of the skin and viscera. Other nociceptive mechanisms are those of cold sensibility, gustatory bitterness and sourness, certain olfactory sensibilities, etc. A study of the facts indicates that the excitation of any of these afferent systems tends to block or to *inhibit* any nerve current which is passing through the cortex at the given time.

The simplest way in which to explain the blocking action of these currents is to suppose that the afferent systems which carry them are so connected with the cerebral cortex that their activity brings about a *decrease* in the conductance of the cortical synapses which are functioning at the moment. We may tentatively identify inhibition with a process of decrease, or negative rate of the change, of synaptic conductance. It should be clear in what manner this system of relationships explains the unpleasantness which is the normal result of stimulating the pain nerves or any of the other receptors referred to as nociceptive in character. When a pain nerve is excited the form of response which allowed such excitation to occur is cut off by the action of the pain system on the cortical synapses which control that response.[2] From the purely physiological point of view this is simply a protective mechanism. On the psychological side, however, it involves an unpleasant state of consciousness, which unpleasantness is referable to the decrease in the conductance of the cortical synapses caused by the excitation of a nociceptive system.

Corresponding to the nociceptors and their attached nervous mechanisms we find certain sensory systems which instead of inhibiting cortical activity especially *facilitate* it. These departments of sensation might be designated as *beneceptive,* since in general they involve the action of stimuli which are beneficial to the individual or the species. The most important of these systems is that of the sexual or erogenous sense. Other beneceptive mechanisms are those of gustatory "sweet" and "salt," the warmth sense and the olfactory responses to fragrant and aromatic substances. When these particu-

[2]It should be recognized that the "response" in question may be a simple *posture.* Cortical inhibition does not imply motor inactivity but rather motor *writhing.*

lar afferent channels are stimulated, instead of blocking cortical activity by decreasing synaptic conductance, they apparently aid it by increasing such conductence. The psychophysical inferences to be drawn are obviously of the same sort as in the case of the nociceptive systems, any action of a beneceptive channel upon the cortex producing in consciousness a positive affection, or a state of pleasantness.

It is to be supposed that these general mechanisms of cortical inhibition and facilitation are laid down by heredity. Their biological function is to control the random, inventive, activity of the cerebrum, to interfere with lines of conduction through the cortex which threaten the welfare of the organism, and to reinforce types of conduction which further its welfare or the welfare of the species. The cortex being the organ of the process of "learning by experience" naturally has at the outset a high degree of flexibility in its activity. But its necessary initiative needs to be checked up in terms of the practical effects of "experience." This "checking up" mechanism is provided by the bene- and nociceptors.

This sort of influence, exerted by a beneceptive or nociceptive sense channel upon the cortex, may be called *retroflex action,* since it is a sort of back action upon the cortex. In a sense a retroflex action may be regarded as the inverse of a reflex action, since the initiative in the process is that of the cortex and the final effect also has the same locus. In this process the modes of conduction through the cortex are regulated by the *practical effects* of cortical initiative in any given environment. A retroflex circuit, if we may speak of such a thing, is not of course a complete nerve circuit, but involves the environment itself as an essential link.

IV

It is clear that any process of increase of synaptic conductance must leave the conductance at a higher level than it had before the process occurred. On the other hand, a process of decrease will establish a lowered conductance. Thus the processes of inhibition and facilitation, as we have interpreted them, must leave permanent records of their nature and degree in the cortical synapses.

This consideration has interesting implications with regard to the relation of affection to tendencies towards specific lines of action, and points to a definite form of *psychological hedonism.* At least three

different forms of this latter doctrine can be discriminated. Bentham's doctrine that "pleasure and pain are our sovereign masters" may mean either (1) that we follow the dictates of *present* affection, or (2) that we are controlled by *anticipated* affection, or (3) that our choices depend upon affection experienced in the *past*. The first two forms of the doctrine have been emphasized to the greatest extent in the history of the controversy, but have been proven inconsistent with the facts. Our theory, however, implies only the last form; it is past, not future nor even present "pleasure and pain" which control our will. This principle harmonizes with the facts.

The manner in which this conclusion is reached may be indicated as follows. We may suppose the cerebral cortex to present possible lines of connection between sensory and motor mechanisms such that any conceivable motor reaction might follow from any conceivable sensory stimulus. The line of connection which is actually operative must involve the selection of the path of greatest conductance through the net-work of possible cortical connections. If we assume that primitively all lines of conduction were of equal conductance, the dominance of any particular line over others must be attributed to changes in the conductance of this line relative to that of others during the life of the individual.

Any such changes, however, would be represented by affective experience on the part of the conscious individual. The conductance of any given synaptic system at any time would necessarily be represented as the sum of its original conductance and all increments of conductance, minus all decrements of conductance which it had suffered up to the given moment. This measure could be expressed mathematically as the "time integral" of the rate of change of conductance of the given system for the time span under consideration, as follows:

$$C = \int \left(\frac{dc}{dt}\right) dt + K \qquad (2)$$

C is the final conductance of the system, c is the conductance at any time as in equation (1) and K is the so-called constant of integration, which represents the initial conductance. It is obviously legitimate to substitute in equation (2) an expression for $\frac{dc}{dt}$ derived from equation (1) viz. $\frac{dc}{dt}$. We then have:

(3) $$C = \int (\tfrac{a}{x}) dt + K$$

The expression $\int (\frac{a}{x}) dt$ or $\int a\,dt$, neglecting the constant, would be called technically the "time integral of the affective intensity." In more popular terms, it represents the *total amount of affection* experienced during the given period of time measured in terms of positive affection, amounts of negative affection being subtracted from the total positive amount. This conception of the time integral of affective intensity I regard as the scientific equivalent of the popular term "happiness."

It appears from the above reasoning that the total amount of affection experienced in connection with a specific line of response is proportional to the total increase of synaptic conductance for the form of response in question. If we consider the total life experience of the individual and assume that primitively all cortical connectabilities were equal it follows that the total amount of affection which has been associated with any given form of response must be recorded in the present cortex by the degree of dominance of that particular form of response with respect to others. In the case of competition between response tendencies that one will triumph which has the greatest total amount of affection associated with its development. This quantity, in the phraseology of Hans Driesch, constitutes the "historical basis of reacting." *Present* affection in the strictest sense can have no influence upon choice, since the present is a mathematical instant and therefore can develop no finite value of $\int a\,dt$ but the passage of time enables the affective intensities of successive moments to establish impressions. Anticipated happiness is, of course, entirely without effect save as the anticipation which is present, or past, possesses affectivity of one sort or another.

It will be clear to anyone accustomed to quantitative thinking that although the above reasoning is stated in terms of positive affection it actually embraces all negative terms of the same sort. "Unhappiness" is simply negative happiness, and the total happiness value of any span of experience is necessarily the surplus of positive happiness over negative. Exactly similar considerations apply to increments of conductance, decrements—which are associated with unhappiness—being simply negative increments. The total increase of conductance during any given period must obviously be the surplus of the sum of all the increments over the sum of all the decrements. A given form of response may become dominant either because of incre-

ments in its own conductance, or, on the other hand, because of decrements in the conductances for all other possible forms of response.

V

The practical significance of the retroflex mechanisms above described obviously is greatly enhanced by the permanency of the effects which they produce upon the cortex. Now, the empirical study of the processes which we have denoted by the term retroflex action indicates that the permanent record left in the cortex involves not only a *quantitative* modification of a given response tendency but also *its permanent association with the retroflex mechanism* which was concerned. For example, if a certain form of response is once inhibited because of the fact that it causes stimulation of the pain nerves, when the orginal stimulus to this reaction again appears it will re-arouse the retroflex process which was originally aroused only by pain stimulation. In terms of what is known in physiology as Pavlov's Law, the retroflex function of the pain sense has become *conditioned* by the stimulus in question. This stimulus has therefore been rendered capable of producing, by itself, decreases in cortical synaptic conductance. Similarly, a positive retroflex function involving facilitation of cortical activity can become conditioned through experience by specific stimuli with which it is not connected with by heredity.

Such associations of primitively neutral[3] stimuli, or forms of reception, with retroflex mechanisms correspond on the physiological side with what the Freudian psychology calls "complexes." Complexes always involve the association of some inhibitory or facilitory tendency with a primitively neutral "idea" or group of "ideas." This association is the result of some experience which so far as the individual is concerned may be regarded as accidental. On the psychological side, of course, a complex involving inhibitory tendencies must be unpleasant, while one which is linked with a facilitory tendency will be pleasant.

In accordance with the above interpretation, complexes may be founded not only upon sex—the basis most stressed in the Freudian theory—but upon any primitive retroflex tendency. Sexual tendencies are undeniably of great importance, but the pain mechanism is probably even broader in its significance. Gustatory, gastric pain (hun-

[3]Such "neutral" stimuli usually belong to *exteroceptive* fields, such as vision, audition, or touch.

ger), olfactory, and temperature complexes are also possible. Complexes may be divided, according as their retroflex basis is one of inhibition or facilitation respectively, into the negative and the positive. Complexes can be based upon more than one primitive retroflex tendency at a time, and when a single stimulus becomes conditional simultaneously to both a positive and negative tendency a process of conflict results. If one tendency wins ascendency over the other, the latter is "repressed." Many of the Freudian cases involve a repression, in this sense, of a sexual by a pain complex. In other instances pain complexes (fears or phobias) are repressed by positive complexes, such as that of the "ego" (*vide infra*).

It is clear when once a specific, originally neutral, stimulus becomes associated with a retroflex function that this stimulus can act to inhibit or to facilitate—as the case may be—any further form of cortically controlled response with which it may happen at any time to be concurrent. In other words, it can take the place of the primitive nociceptive or beneceptive stimulation in primary retroflex action. Such a process resting upon a conditioning of the fundamental retroflex functions through experience may be called *secondary retroflex action.*

It is obvious that this process of conditioning and reconditioning can go on *ad infinitum* and build up definite constellations of response tendencies in the cortex which have an extremely complicated historical basis. The vast majority of our adult processes of "learning by experience" and the development of new forms of behavior in general do not rest directly upon the stimulation of primitive nociceptive or beneceptive sense channels but rather upon an elaborately conditioned operation of the central functions of which these channels are the normal exciters. The early education of the child, particularly his so-called moral education, has as its real function the production of conditioned retroflex systems which can be employed by society in his later life to control his behavior. One of the most complicated products of this progressive pyramiding of retroflex functions is the so-called "ego complex," which dominates the behavior of practically all contemporary human beings. This complex is not based upon any single nociceptive or beneceptive channel but upon all of them combined in a certain manner with primitively neutral stimuli.

Complexes are usually regarded as abnormal or psychopathic affairs, but if we accept the theory above outlined all human tendencies to action must rest upon complexes in the broadest sense of the

term. We notice a complex only when it is of an unusual kind which incapacitates the individual to some extent for normal life. The majority of complexes, however, are absolutely essential instruments to the proper adjustment of the individual to his natural and social environments. They provide him with the motives which are necessary in order that he should survive individually and that his species should be propagated.

VI

There is a great deal of discussion in current psychology with regard to the part played by *instincts* in the development of human behavior. All psychologists recognize clearly that truly instinctive action is found in certain lower animals, particularly among the invertebrates, but there is considerable question as to whether man possesses instincts in this sense, that is, whether he has any *complicated* forms of adaptive response which are inborn.

The theory above outlined suggests that what we call instincts or instinctive behavior in the human being may actually be complexes or forms of response developed by experience in connection with the retroflex functions. Some of the complexes which are produced by experience follow almost inevitably from the nature of the hereditary retroflex systems and the general characteristics of the human environment, so that these complexes must appear in every normal human individual. This relative invariability would cause them to be mistaken for instincts. It seems to me highly probable that practically all of the so-called instincts of the human being are actually general complexes of this sort.

The above expressed opinion must not be taken to imply a disbelief in the presence of any completely hereditary forms of response in the human animal. There is not the slightest doubt that a great many such forms of response exist, but practically all of them seem to be carried out through synapses in the spinal cord or other nerve centers lower than the cerebrum. None of these hereditary responses, moreover have a sufficient degree of complexity to warrant their classification as instincts, although many of them form *parts* of complicated responses which I conceive to be developed by experience but which are often regarded as instinctive. The cerebral cortex offers only one out of many alternative paths by which afferent nerve energies can pass over into efferent channels. We are certainly compelled to suppose that practically all of the nociceptive and beneceptive nerve

paths discharge not only in a specific way into the cortex but also into specific motor chanels *via* synapses of the spinal cord, medulla, or mid-brain. These lower center connections are wholly hereditary and their motor expressions are necessarily implicated in any response system of which the retroflex mechanisms form a part. Thus pain stimulation, for example, normally brings about a general innervation of flexor muscles and of the sympathetic nervous system.

It is very doubtful whether any definite hereditary forms of response are mediated through connections in the cerebral cortex.[4] The cortex appears to be the organ of flexibility and adaptability in response, and is at its highest level of development in the human species, in which also it appears to dominate with great power all other nerve centers. No doubt the cortex has a definite anatomy which is determined by heredity, but the function of this anatomy appears to be to render possible the greatest variety of interconnections of afferent and efferent nerve paths, without determining which ones among these possible connections shall become effective. It is upon cortical processes alone that we conceive the human introspective consciousness directly to depend.

Shand, McDougall, and others have attempted to correlate *emotions* with instincts, claiming that for every instinct there is a corresponding emotion. Instinctive activities are often divided by such writers into primary and derived forms, which implies a corresponding division of the emotions. According to the present theory, the primary emotions would correspond to primitive unconditioned retroflex functions. All other emotions would be of the derived type. There is still considerable argument among psychologists as to the exact definition of an emotion, but, in spite of the James-Lange theory, affection appears still to be regarded as an essential constituent. Whether a given experience is called an emotion or not seems to depend upon its intensity, and in particular upon its affective intensity. My view would be that any experience accompanying a sufficiently powerful arousal of a retroflex function is an emotion. The majority of emotions in adult experiences depend upon a conditioned arousal of these functions, being associated with specific *complexes,* and are therefore to be classified as derived emotions.

It is a characteristic implication of the present theory that the essential bases of specific emotionalities lie in various afferent, rather

[4]Exception may have to be made for certain oculo-motor adjustments.

than efferent systems. So-called instinctive behavior in man must be studied in relation to a subdivision of receptors rather than of effectors, if progress is to be made.

VII

The above sketch is, of course, too brief to provide an adequate presentation of a theory as comprehensive as the one with which it deals. The sketch provides all the necessary materials, however, for any student of the subject to work out detailed developments of the theory, whether these involve an application to problems of normal or of abnormal psychology. I hope to follow out some of these details myself in further papers dealing with specific problems of the affective life.

THE CONDITIONED REFLEX AND THE FREUDIAN WISH

BY GEORGE HUMPHREY

PERHAPS the most serious ground for misgiving in the psychology of Freud is what seems the entirely anthropomorphical nature of the wish. The wishes appear out of the blue sky of the unconscious, they fight, they compromise, they subject each other to the indignity of suppression, they join hands, they agree to differ. They seem to behave not as the parts of one man but as an army of men, or rather not as an army but as many armies. The picture has of course the merit that it is graphic, and by contrast with the psychology of a generation back that is a welcome quality. But such anthropomorphic entities, however lucid the metaphor they present, are scientifically dangerous, and are usually found to be the product of incomplete thinking, and it is the purpose of this paper to show by means of the conception of the conditioned reflex that what are apparently entities may be reduced to a much simpler form.

Consider the genesis of the desire I feel for food every day at certain times. Once all that was necessary to satisfy this desire was food alone. It makes little difference to the hungry boy of six whether he eats his pudding on the floor or at the table, out of his nor over clean pocket or from a silver dish. But when he is forty years older he may have become an epicure. His dinner must now be punctual or his appetite is spoiled. The cloth must be clean, the lighting subdued, the service expertly deft, the table properly set with all the accessories of food well cooked and eaten in a seemly manner. There is a great difference between the eating of the little boy sitting on the kitchen floor and that of the epicure whose appetite is spoiled if he happens to have been given someone's else napkin. And yet a clean napkin is not part of the food. Why then must there be all these frillings to a meal in addition to a sufficient quantity of well cooked food? Because, to use a hard worked term in psychology, they have become associated with food. They have been present for years on previous occasions when the food and the cooking were good, simultaneity being, as Aristotle observed, the essential factor for association. Moreover they now serve as a stimulus for food and in place of it. When the bell has rung for dinner and the process is

gone through of sitting at the table with the lights duly shaded, the knives and forks and other accompaniments of food properly arranged and the napkin smoothed down in its right place, the mouth waters. The reaction to food has begun without the sight of food, by means of these other things that serve as conditioned stimuli for the food reaction. In other words, the wish for a meal consists of the hunger motive put into operation by the mechanism of the conditioned reflex, or rather of a number of conditioned reflexes.

Pavlov has shown that almost any stimulus occurring at the same time as the primary stimulus will thus condition the reaction of that stimulus, and in another connection that not only are the salivary glands excited but that in addition the gastric juices begin to flow. Thus the whole complex process of digestion is actually initiated by these stimuli which originally were incidental, and without meaning, and although in actual life instead of fairly simple secondary stimuli such as colored lights and musical notes we have a highly complicated system of extra stimuli, yet the principle is the same. The whole process which we call digestion is set on foot by the action of a number of stimuli originally extraneous, the wish to eat now becoming the wish to eat "like a Christian," that is, to eat with all the secondary stimuli. In the same way other wishes can be analysed into reflexes, and in general it may be stated that the wish, as Freud uses the term, is a course of action for which the organism is set (Holt) by means of a system of conditioned reflexes.

A system such as we have described requires, as we have seen, a very complex system of stimuli to set it off. Sometimes it happens that while some of the necessary stimuli are present others are missing. In this case some of the reflexes will remain unstimulated, and the system will be in part excited and will remain in part unexcited. The dinner gong may ring, the guests come in and take their places but the soup may not appear. Worse, the soup may appear but the dinner may not be able to start because someone is called away. It is then that the diners would say that they began to wish for their dinners. When a system is partially excited we have a wish in the non Freudian sense of the term. A strain is set up, and the whole system is thrown out of equilibrium. Nothing can now put things right but the proper stimuli, and after the delay even these may not be sufficient. The dinner may be entirely spoiled by a late arrival. The purest example seems to be the process to which Krasnogorski has given the name "loading and discharge." Here we have a stim-

ulus A and a stimulus B both of which are necessary to set off the reaction. The two stimuli are separated by a three minute interval. If now the stimulus A is given and is not followed by B, there is no apparent response. Yet something must have happened within the organism, for this apparently responseless stimulation is a necessary condition for stimulus B to be followed by the adequate reaction. There has been partial or inadequate stimulation. It is to be emphasized that in adopting the term "loading and discharge" nothing is implied as to the nature of the process; the physiological controversy hardly concerns us here.

Such partial excitation occurs in many of the pathological cases and is a fruitful cause of pathological conditions. For example, in the case cited by Doctor Kempf, where the daughter-in-law vomited at the sight of red fruit, the vomiting occurred not from the pure stimulus of the sight of red cherries but because the stimulus was part of a nexus of stimuli. The sight of red cherries brought partial excitation. Similarly in a case described by Healy where a boy was shown indecent pictures by a friend and began to imitate the bad habits of the latter, the potency of the photographs and the influence of the friend depend on the fact that a whole system of reflexes has been thrown out of equilibrium. The same thing happens in many advertisements and in all suggetive pictures, the art of whcih is to present such a stimulus as will set in a state of unrest a powerful system, thus exciting a wish in the non-technical sense. But not all cases of pathological seriousness are to be set down to this cause. For instance, Burnham gives an example of a girl who developed hysterical fright from a dog that jumped at her, first the place serving as a stimulus for the original reaction, then reminder of the place by teasing, then the presence of the persons who had teased her. Here, for the dog as stimulus is substituted the kennel, for the kennel the mention of the kennel, etc. There is complete excitation, one of the stimuli in this case, as sometimes happens, being sufficient. Indeed it is the completeness of the excitation that makes the case pathological. For the normal reaction would have been a partial excitation, bringing a state of mild tension. In a healthy organism this would have been endured and gradually eradicated by counter experiences, as the experiments of Pavlov and others have shown to occur in the unlearning of conditioned reflexes. Partial excitation of this relatively trivial type occurs every moment of our lives. A stress is always engendered, but whether or not the stress will cause a disturbance so important

as to be considered pathological depends on the nature and strength of the system involved and the robustness of the organism.

There is one type of pathological case, however, that is always caused by the mechanism we have described, and that is the case usually described under the name of conflict. Here there are said to be two opposing wishes which line up one against the other and fight a bitter battle until one is vanquished. Sometimes one is able to reduce the other to a state of relative impotence without however being able to destroy it altogether. Then there is victory without peace, the organism which is unfortunate enough to be the seat of the warfare being torn in two directions by the victorious trend on the one hand and the counter efforts of the defeated wish on the other. A doctrine as picturesque as this should immediately be reexamined.

Suppose I pass a baker's stall when I am hungry and see a well baked biscuit just to my hand. I am tempted to take it, but do not do so because of certain social inhibitions concerning other people's goods. Here we have the essentials of a conflict. There is the wish for food, which says take it. There is the commandment which says thou shalt not steal. Between the two, if I am hungry enough, results a struggle, according to the usual account, which tears the organism in two different directions and subjects it to very serious discomfort. But consider what has happened. The system of reflexes which constitutes the digestive process has been partially excited by the stimulus of the sight of the food. Full excitation can only be brought about by a succession of stimuli which would mean taking up the food, biting it, letting it remain in the stomach, etc. Inhibition has cut this chain of stimuli short. It has prevented the taking of the food into the mouth, although the first stimulus, the sight of the food, has been given. The pain which the man experiences comes from the fact that a system[1] of reflexes of enormous strength has been partially stimulated. That this is so, and that the pain does not come from the fact that there is an internal struggle, is neatly shown by the fact that the situation and the pain that go with it may be produced by the partial excitation alone without the struggle. In the Odyssey, Book XI, lines 582 to 592, is told the story of Tantalus "in grievous agony," who, it will be remembered, was put in a lake over which hung grapes, both the water and the fruit disappearing whenever the old man tried to get at them. Here is the pain without the conflict, and the

[1]Or to be more precise, two systems. A "conflict" is generally due to double partial excitation.

general situation is so common that there has been invented the word tantalize to designate such partial excitation which is not caused by inhibition. If now the grapes had belonged to someone else and Tantalus had had qualms of conscience about eating them, there would have been a so called conflict, but the pain would have been caused not by the struggle but by the partially excited chain, or possibly chains, of reflexes. Further, the human being is so constituted that it likes to imagine that all hindrance comes from within in the form of inhibition. If Tantalus had been a little less hungry he would have said that the grapes were sour. The pain of what is called a conflict, then, is internal to one or both of the systems involved, not external to them both. It is not the fact that there is inhibition that causes the discomfort, but the fact that a powerful system has been partly but not adequately excited. There is no evidence that mere inhibition does psychical harm, any more than, according to Sherrington, it does physical harm.

Summing up: by simultaneous concurrence there are set up systems of interconnected conditioned reflexes, the reaction to the combined stimuli of which constitutes the Freudian wish. The constituent reflexes come to condition each other as well as the joint reaction, and so, when some are excited and others not, the whole mass is thrown into a condition of stress, the effect of which on the organism depends upon the nature and driving force of the system disturbed. Thus is born the wish as the ordinary man understands it, which is a mild form of conflict, the discomfort of which in the pathological cases as well as in the milder form is due to the partial excitation of a system of reflexes.

TREMOR FOLLOWING EXPLOSIONS

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THE diagnosis of the functional disturbance known as Tremor which so frequently follows proximity to explosion is one which presents several problems for solution. Is this Tremor of hysterical, emotional, organic or neuropathic origin? Can it be simulated? What treatment ought to be employed? and, how ought one to deal with Tremor-stricken soldiers?

Without supplying a decisive answer to any of these questions Henry Meige in the following history of a patient so afflicted gives several indications destined to facilitate the clinical analysis of this disturbance, and incidentally certain military judgments.

On the 13th January, 1915, Corporal S. and his men were occupying a trench when the bursting of a torpedo above him threw him violently against the wall without wounding him, although several of his comrades were killed. It is not certain that he lost consciousness; he remained felled to earth until an adjacent communication trench was sufficiently completed to admit of evacuation. He had begun to tremble a short while after the explosion. Back in the trench he still trembled. In spite of this he remained there for a fortnight trembling all the time. He lost appetite, became thin, and could no longer handle a rifle. He was not evacuated for a month. Then, as his condition did not improve, he was sent to various institutions, until the 13th April 15 found him in the Neurological Centre at Villiers-Cotterets where he remained for two months.

There he was examined by Guillain who supplied the following information. This man's complaint had been diagnosed as "Hysterical chorea." He trembled in every portion of his body. The patellar and achilles reflexes were active, those of the upper limbs were normal, and there was no disturbance of sensibility. There was neither tachycardia nor bradycardia—only a state of emotion so keen that it accentuated the tremor. This became particularly violent at the sound of cannon, or the bursting of bombs in the neighborhood. No improvement was recorded during his stay at Villaret-Cotterets. Lumbar puncture revealed a normal cerebro-spinal fluid without hypertension, non-hyperalbuminous, and devoid of cell. On the 19th

June 15, he entered the Salpetriere. A month later he was sent to a civilian hospital, where he stayed until the 24th September, from whence he went home on convalescent leave for a month. He returned to the Salpetriere on the 15th December, 1915. During the whole of this time, his condition had not altered in the least from what it became after the explosion which caused the mischief—a year previously. He trembled continuously.

This tremor, apart from any casual emotion, was visible in the four limbs, with a slight accentuation in the upper-right limb, and the lower left. It used to cease during sleep, although it continued in the recumbent position just as in that of sitting or standing. Toward evening it became more marked, and the patient only managed to get to sleep very late. The head trembled only slightly. There was a slight and irregular twitching of the eyelids and tongue which did not synchronise with the tremor of the limbs. There was no nystagmus. In order to lessen the trembling of the upper members, the patient used to hold his forearms at right angles to his arms, firmly against his sides. When the trembling of the lower limbs became very powerful, he used to get up and walk about. Any movement, such as seizing an object, carrying a spoon or glass to the mouth, used to exaggerate the disturbance. It then recalled the intentional tremor of the insular sclerosis in its most intensified form.

But the principal cause of the exacerbation was emotion. A sudden noise, a sharp command, the mention of a stay in the trenches would bring about a veritable motor crisis. The patient's body would jerk in the most marked manner, and his legs would tremble so as to almost cause loss of equilibrium; then this excessive agitation would gradually due down, although the original tremor would remain. The search for the reflexes was a difficult matter because the slightest percussion would cause the most violent jerkings. There were no disturbances of sensibility, and perspiration was easy and abundant. The pulse varied according to the degree of the tremor. In repose it would be 60, while a sudden rap on a table would bring it up to 120."

In order to find out how to deal with such a case, it is necessary to analyse successively the trembling proper and the paroxysms which occur on certain occasions.

These tremblings used to be classed as belonging to a classical type already nosologically recorded with the utmost precision, and it is true that these types are observed clinically, although the hybrid

or atypic forms are less numerous. The Parkinsonian type is one of the most characteristic because of the regularity and the synchronism of the oscillations in all the segments and especially their predominance in the extremities, particularly the fingers.

Certain Tremor-stricken soldiers present this type, and the observation of agitated paralyses dates further back than yesterday, several cases having been noticed at the Siege of Strasbourg in 1870. The etiological features of this present day tremor favour the idea that its symptoms are identical with those of Parkinson's disease. The latter syndrome is regarded to-day as the manifestation of an organic lesion. If the situation and nature of the lesion are still uncertain, yet their striking analogy to these pseudo-bulbar and lacunar disease admits of the possibility of lesions in the vicinity of the central gray nucleus.

It is perfectly admissible that the shock and concussion caused by violent explosion can produce more or less lasting disturbances in the same region of the encephalon, acting either directly upon the nervous centres and tracts, or indirectly by means of the vessels or ventricular liquid. This is why a Parkinsonian tremor following upon shell-burst points to the possibility of an organic lesion. The case just described, does not favour this idea, but examination of the cerebro-spinal fluid did not take place until three months after the accident. Nevertheless the symptoms of this case differ appreciably from those of Parkinsonian Tremor; there is neither regularity nor synchronism in the oscillations—the characteristic trembling of the fingers particularly being absent. Finally whilst the Parkinsonian illness is a progressive affection, where the Tremor gradually invades all of the members, in this case, as in the majority, the condition of the patient undergoes no change. The lesion, if lesion there be, remains as it was in the beginning.

This remark is important both as a prognostic and as a guide to military decisions. Moreover, it is evident that in the patient under discussion, the tremor is of the type known as "intentional." The disturbance is accentuated by any spontaneous movement, while it becomes excessive if, for example, the patient is asked to convey a half-full glass to his mouth, a fact which is no doubt explained by his fear of failing to accomplish the act safely. In this respect the Tremor can be compared to that occurring in multpile sclerosis, but there is no other clinical sign which bears out this resemblance. As far as the rest is concerned, Meig does not consider that the "in-

tentional" nature of the Tremor is a very safe guide to diagnosis. More often than not, it is a mere manifestation of the patient's inability to overcome his fear of failure of accomplishment. Thus, in such a case, the Tremor is nothing more or less than a reaction of emotional origin, which often plays an important part also in subjects with multiple sclerosis also in the majority of other Trèmblers.

This exaggerated oscillation upon attempted movement is also found in the Tremor which accompanies organic affections. It is present in the disease of Freidreich, in lesions of the cerebellar apparatus (acute Tremor of Reginald Miller). In all cases of tremulous neurosis, hysterical Tremor and Tremor of Degenerates, etc.). This sign is well worthy of being noted, although too deep a significance must not be attached to it. The same is true of the frequency and extent of the oscillations; these vary according to the patient and the occasion which calls them forth. On the contrary, their regularity is more important and speaks in favour of an organic origin. It was noticed a long time ago that neuropathic tremblings, and notably those accompanying hysteria were essentially polymorphous. At this juncture, it is well to point out the abuse which is made of the term "Hysterical Tremor" to label Tremors the nature of which is unknown. It is very doubtful whether Tremor is one of the charactes of hysteria, although it is possible that in certain subjects it may have been evoked by suggestion. One thing is certain however, viz., that in the vast majority of cases Tremor resists any and all Psychotherapeutic tentatives. Even the best-directed will fails to overcome it; if ever a short respite is gained, it never lasts long enough to lead us to anticipate material modification. Such was the case of the soldier under observation; hysteria was not at the bottom of his trouble. "Let us limit our statements," says Meige, in concluding his remarks, to saying that this man's trouble was not a case of Parkinson's tremor, nor yet of cerebellar commotion, that he presented no sign of multiple sclerosis, nor of general paralysis, Grave's disease, nor of intoxication reputed to be tre-ogenic, saturnine, mercurial, ethylic, opotherapic, etc., and let us add that neither heredity nor congenital deficiency, nor, in view of his age, senility, played any part therein.

Thus, although the character of this Tremor resembles those considered as neuropathic manifestations commonly observed in traumatic neurosis; nevertheless, given its etiology, tenacity and immutability it is not impossible that it is the consequence of some material deterioration of the nervous system caused by a violent explosion.

What is the explanation of the paroxysms which, in the case of this soldier, sometimes take place? They are evidently emotional reactions, and it is no longer a question of a mere trembling, but of jerking. A sudden noise, a surprise, an unexpected order, a painful memory of incidents of the war, all serve to bring about this phenomenon. It is a sudden movement of the whole body manifested more or less intensely on any of these occasions, varying according to the impressionability of the patient. In some subjects it is merely a sudden jump; in more emotional natures the first jump is followed by a series which gradually decrease; this is the jerking movement, or, as Littre aptly describes it—"The sudden agitation of a person profoundly moved."

The analysis of this jerking phenomenon is interesting, and it must be distinguished from Tremor.

The elementary motor reaction which produces it is due to a sudden contraction of nearly all the flexor muscles. The arms stick to the sides of the body, the forearms fold back on the arms, the fingers close, the thighs and legs close up together. The trunk curves forward except in a few exceptional cases; the shoulders are raised and the head lowered. The facial muscles also share in the general contraction; the eyelids close, the teeth and lips shut firmly. In short, the individual replies to an emotional shock by a general defensive reflex movement by which the body seems to shrink into itself. This phenomenon of retraction is found in all grades of living creatures—beginning with the amoeba—when threatened by sudden danger. It is followed by a more or less sudden and complete relaxation. Sometimes it is repeated several times in succession with growing intensity, followed by diminution. Such is the jerking phenomenon. This is exactly what is observed in this soldier, but in his case, the motor phenomenon is excessive and repeated a great many times, assuming the aspect of a general convulsive crisis which subsides only very slowly. When seated or lying down the emotive reaction has all the characteristics described under the name of jerking. When standing, the jerking of his lower limbs threatens his equilibrium. He then has the appearance of one suffering from that form of astasia—abasia or pseudo-chorea incorporated under the name of hysteria. After the jerking crisis, he gradually calms down. There remains only the Tremor, which is unceasing.

Gilbert Ballet has stated that certain tremors can be considered as "Mimicry of fear." This idea is quite correct as re-

gards the emotive paroxysms of our patient. They can be considered as the echoes of the initial emotion which he felt at the explosion of the torpedo,—emotion aggravated by commotion—and followed by the agonising wait at the foot of a mine trench surrounded by dead or wounded, for aid which was merely problematical. In the course of these paroxysms it was noticeable that his expression was undoubtedly that of terror. But if this explanation is admissible for the jerkings, it is not certain that it accounts for the perpetual tremor which by its existence and tenacity points to a durable and permanent perturbation of the neuromotor apparatus. It is not less true that a large number of cases of Tremor are, like the jerking phase, of emotional origin. Trembling itself is one of the common manifestations of emotion, very varied however, in intensity and localisation. It may affect the hands only, or the jaw, thereby causing the teeth to chatter. When the lower members are affected, the knees knock together. Sometimes it merely takes the form of very rapid and feeble shaking, and other times it develops into a veritable convulsive crisis. But whatever be its form, this post-emotional motor reaction is transitory; it generally disappears more or less quickly as soon as the first shock wears off.

When a tremor of emotive origin becomes settled and lasts for months or even years in the absence of ascertainable hysteria, it is difficult not to ascribe it to the existence of an organic disturbance. The emotive shock may suffice to produce this, a fortiori if there is added to the emotion a commotion accompanied by a sudden change of pressure as is the case in the explosion of large projectiles. (See Tom A. Williams Differentia of Phobias and Obsessions, Internat. Clinic, 1919, Vol. IV, where after years' duration, these are made to disappear in a week or so.)

The emotive nature of a tremor is confirmed first by its origin, then by the influence of emotional shock, which is capable of provoking it anew or of exaggerating it. Finally, one ought to seek for the signs of emotional constitution, the value of which Dupre has demonstrated, viz., hyper-reflectivity, tachycardia, sudden vaso-motor and secretory exaggerations. The majority of these signs were present in this soldier. But, in this case it cannot be proved that they did not exist before the accident. Neither is it impossible that the emotive syndrome was created totally by a violent emotion.

In analysing a case of Tremor, a mental examination is also necessary. In the case of our soldier, the man was quite aware of

his Tremor and its exacerbations caused him intense sorrow and humiliation. He was wretched at not being able to control the movement of his limbs. He suffered greatly on account of this powerlessness and particularly at seeing himself ridiculed by some of his companions, who took a malicious delight in bringing on these paroxysms. Therefore he lived in a solitary fashion, seeking only to efface himself. Dread of provoking his Tremor became with him a veritable obsession, in the psychiatric sense of the word. And it is true that if this Tremor had all the appearance of the shaking of fright, it is equally certain that this man was afraid of his tremor and its jerking phase. He presents, therefore, all the symptoms of the psychopathic state which Henry Meige described some years ago as Tremophobia, of which a brief description is as follows:

"This variety of phobia is not rare in subjects who are troubled with trembling of the head or limbs. Tremophobia participates in all the characteristics of obsession, resembling particularly the Ereuthophobia (fear of blushing) of Pitres et Régis. One sees it especially in persons of emotive constitution, and who thus have a predisposition to it. The physical phenomenon engenders the obsession which, in turn, amplifies the eomatic reaction, while the exaggeration of the latter reacts similarly on the mental disturbance. There is thus created a vicious circle of reciprocal psycho-physical reactions, which ends in an evil state of obsession. Tremophobia can begin with a genuine tremor, one so-called constitutional, hereditary, neuropathic, senile or any other variety allied to a tremogenetic affection, or like Parkinson's disease, multiple sclerosis, Grave's disease, etc. The fear of trembling is also linked with ideas of humiliation, of loss of prestige, nosophobiac anxieties, etc. In short, Tremor, be the cause what it may, can become, in subjects predisposed thereto, the beginning of an obsessive psychopathic state, that of Tremophobia. This description is applicable to the patient under observation. He is not only a trembler, a jerker, he is—to use a neologism—a 'Tremophobite.' "

Cases of this type are numerous at the present day. The following is a second example:

B——— was evacuated from the Front because of Tremor following upon prolonged bombardment. He was an artist, who for long months had cheerfully borne the hard life of the trenches, but there came a day when, after a particularly heavy firing, "the machine got out of order" to use his own expression. He began to tremble. The Tremor persisted, being particuarly visible in the

head and upper members, especially the head, which vibrated laterally in varying degrees of intensity. The patient tried to master it by stiffening the muscles of the neck, but only with partial success. The trembling of the hands also was comparatively slight, not being greatly exaggerated by movement, capable of partial control by powerful contraction. On the whole, this man seemed to be in a state of controlled vibration. This bears some analogy to Parkinson's disease, but only superficially. Any doubt as to the emotional nature of this Tremor is dispelled by the co-existence of emotional, circulatory and endorcine reactions, and finally by a psychopathic state which the patient himself analysed exactly, as may be seen from the following:

"For nearly four months, ever since I was evacuated from the Front, my nervous state, which I thought would last barely a fortnight, still persists, although slightly ameliorated. There is no doubt that I am calmer. My heart does not beat as it used to do, neither do my hands perspire so profusely upon the occasion of the slightest emotion or effort. At first, the slightest shock would make me tremble uncontrollably. I can master the Tremor for a few minutes, but no longer. The noise of the doors of the Metropolitan, a wavering light, the whistle of a locomotive, the yapping of a dog, a childish peevishness, all have the effect of arresting the Tremor. The theatre, music, the reading of poetry, a religious ceremony—have exactly the same effect. I went lately to see a flag placed in the Invalides, and before the moving spectacle, I fancied myself cured. Then all of a sudden, I began to tremble, and to such an extent that I was obliged to sit on the ground and cry like a child. Sometimes the tremor came on suddenly without cause. For instance, I went to a shop with my wife to do some shopping. The crowd, the lights, the rustling of silks, the colors of materials were all a delightful contrast to our life of misery in the trenches. I chattered and was as happy as a schoolboy on holiday. Then, suddenly, without any reason, I felt my strength going. I stopped talking, I had a pain in my back, I felt my cheeks become drawn, my gaze became fixed, and the Tremor returned, and with it a feeling of great physical discomfort. At such times, if I can lean up against something, sit down, or especially lie on my back, the tremor diminishes or even stops pretty quickly. . . . I feel uncomfortable under three circumstances—upon waking after ten to eleven hours sleep; then after meals, especially good ones. Finally and above all, under the electric douche. There, as if by magic, my ideas become clear, happy and powerful. I

feel myself again. This lasts for an hour or so, and then I fall back to my former unhappy condition."

A very good description of Emotional Tremor.

This is where the Tremophobia comes in:

On a tram, or in the Metro, I feel that people are looking at me, and it makes me miserable. I know that my state inspires pity. One good woman offered me her place. I was touched to the bottom of my heart. But when they look at me and say nothing, what are they thinking? This uncertainty causes me a good deal of suffering. If only I can talk, I don't feel it so much, because they can see then that in spite of my trembling I am not a poltroon. What a sad state to be in.

There is no doubt that Tremor of this type is accompanied by an amount of moral suffering which it would be unjust to ignore.

A final question arises. What is to be done in a case like this? According to Meige medicamentary means have little hold on tremor whatever their nature may be. The only medicaments which have a sedative effect, and that only a short one, such as hyoscamine, hyocine, duboisine scopolamine, etc., ought to be used with the utmost caution. In one case static electricity produced a very happy result, but this is not invariable. Finally, from a military point of view, the following seems to be the best method to adopt:

First—A period of observation—of the characteristics and evolution of the Tremor. If the latter does not abate, grant leave of convalescence for one or two months. Then a fresh period of observation lasting for about a month, *under the same doctor*. After that, if the Tremor persists with the same characteristics, temporary discharge should be granted. When the man is called up for re-examination it is desirable that the Doctor who previously attended to him be called upon to give his opinion. We can do much better than this (see loc cit "Phobies.")

In concluding his article, Henry Meige makes the following remarks regarding the medico-legal decision to be made with reference to Tremophobia:

"When it is a question of Tremor following upon traumatisms, notably in cases of industrial accidents, one must beware of simulation. In the second place, an appreciation of the motor disturbance must be arrived at in order to know where Tremor ends and Tremophobia begins. In cases of Tremor following upon accident, it is not unusual to find that the subject, in the course of medico-legal examinations has

cultivated voluntarily and consciously a manifestation of the effection with a definite end in view, and at other times it may be a return of the malady to which Brissaud gives the name of sinistrosis. But in other patients, Tremophobia and psychopathic disturbances may also serve to exaggerate the Tremor. The Doctor-Judge ought to know this."

As to the evolution of the incapacity which results from Tremor, this varies considerably in accordance with the intensity and the localization of the motor disturbance, and whether it is influenced or not by movements adapted towards the fulfilment of a definite end, by emotional shock and finally according to the patient's profession. If it appears impossible to fix in advance a percentage of invalidism, it will be necessary to devote to Tremor, chapters in greater detail than these which appear in the currently-consulted military hand-books, in order to arrive at a correct appreciation of the remaining physical aptitude, or for the necessity of preparing the papers of discharge. (See Treatment of Military Hysteria, *Military Surgeon,* Nov. 1919; also Emotion in Warfare, *Jour. of Abnormal Psychology,* 1919.)

PHYSIOLOGICAL FACTORS IN TREMOR

I. A type of Functional Tremor of somatic origin is that provided by the injection of adrenalin. It is a question whether this has any relation to a possible modification of muscular tonus by the influence of adrenalin upon the sympathetic fibres which now we know do enter the muscles, perhaps destined for the sarcofibrils. On the other hand, the phenomenon may be a chemical one due to the oxidase which some experimentalists believe to be an important constituent of adrenalin.

II. To be compared with this tremor is the coarse intension tremor of insular sclerosis, the physiological basis of which is regarded as an absence of proper insulation due to the destruction of the white substance of Schwann, whereby the nerve impulses are rendered irregular. This interpretation is particularly favored by those who believe in the identity of nerve energy with electric energy. The Tremors seen in alcoholic neuritis are the more explicable in a similar fashion, namely, that the alcohol has modified the lipoid material of the white sheath so that it ceases to insulate adequately. The extreme of this condition is seen in the anatomical appearance of alcoholic neuritis, in which the white sheath has first broken down into droplets and eventually disappears.

III. A different set of considerations must be borne in mind, however, in relation to the influence of the cerebellum upon tonus, which leads to the jerky movements, the disorder of which function produces dysergia. This disorder should be opposed to that derived from disturbances of the cerebrum, for the function regulated by the cerebrum is not regarded as that of tonus which is controlled by the sarcoplasm, but is believed to be the clonic function which permits of rapid intentional movements and is regulated by the myofibrils.

An analysis of these respective elements is necessary if one is to correctly envisage any case of tremor other than one of psychogenetic type. (See forthcoming Book on Disorders of Nervous System in Warfare.)

THE TREATMENT OF TREMOR

In several French and at least one British clinic, attention to the practical aspects of chronic tremor has been stimulated by the questionnaire which was sent by me in November, 1917. In one of these centres, the study of the question has led to the conclusion that the vast proportion of cases show that a Tremor is in reality within the patient's control if a sufficiently powerful stimulus is brought to bear upon him. To this generalization there are only two exceptions, namely those Tremors due to organic disease of the nervous system which is characterized by very distinct and unmistakeable signs, and secondly those Tremors of emotional provokatis, which show themselves as very fine oscillations. These are in all probability due, not to the emotion itself, for in acute emotional conditions the Tremor is of a much coarser kind. They are probably, therefore, in reality of chemical mechanism, being of the same type as those seen in toxic conditions. They do not differ in any way from those exhibited in Grave's disease. They are accompanied by tachycardia, flushings, hyperhydrosis, insomnia, restlessness, over-excitability, emotionalism and even progressive emaciation, and these patients are indistinguishable from the mild cases of hyperthyroidism which are seen so frequently *by those who look for them* in civil practice.

Hesitation regarding the pathogenisis of tremor in many cases which do not possess the usual characters of organicity nor of toxicity, has been largely due to the fact that there has been failure in them of the treatment which succeeded in cases which seem similar. This argument, however, is not valid, for there has not been taken into

account the variations of individual resistance to pyschotherapeutic interventions, and that the simple slight and often half-hearted intervention of suggestion, persuasion, reinforcement by electric apparatus, the example of the cure of other patients which is sufficient in the majority of eases may be quite insufficient against the more resistant type of person. Reflection upon this issue, the result of my questionnaire, led the chief of one Neurological Centre to recall several patients whose Tremor he had concluded was organic because he had failed to cure them. Reconsideration of the matter led him to believe that the Tremors in question must be purely functional and their regulation within the patient's power. He accordingly retreated those patients much more intensely, pushing the appeal to the utmost, and in all cases ultimately succeeded in causing the complete disappearance of the Tremors, which was a complete proof of their non-organic nature. One of these cases was particularly instructive; for the man had received a wound in the left parietal region which apparently was the cause of a clonic tremor of the right arm, which persisted even in sleep. Further there was a history of Jacksonian attacks. This man had been discharged from the army under the belief that his condition was due to the wound in the head. A colleague, however, insisted that there were no organic signs whatever, and that the Tremor furthermore seemed to him such as might be reproduced intentionally. The patient's power of inhibition was very strongly stimulated by means of very powerful faradism which he knew would be prolonged for several hours unless recovery occurred as had been the case with other patients. The resúlt was that after an ineffectual struggle he began to control the Tremor, which completely and permanently ceased at the same sitting.

The *principle of treatment* depends upon the fact that when intentional and purposive movements are made by such patients under strong stress, there is always a tendency to cease trembling. It is a reaction similar to that which occurs in paralysis agitans, in which the trembling usually ceases when co-ordinate movements are made.

METHOD OF TREATMENT

Movements are compelled by means of a desire to avoid the painful stimulus of the faradic current. The physician orders a movement, such as that of lifting the leg, places behind the limb two electrodes held in his hand. The tremulous oscillations of the pa-

tient cause his limb to touch the electrodes from time to time, which is exceedingly painful. As a result, he can scarcely help steadying his movements. By means of a series of back and forth movements directed by means of the eletcrodes the Tremor entirely ceases. When this occurs, the patient is ordered to make movements unassisted. The mere threats of the proximity of the electrodes usually suffices to prevent further tremor. The patient thus exposed in his pretention that he could not avoid the Tremor, knowing that the Doctor knows that he can do so, and convinced himself that if he does not stop the Tremor further pain will be inflicted, does his best to cease trembling, and invariably succeeds, as now the motive to stop the trembling is greater than formerly was the motive to tremble. The psychical process is not really different in principle whether the patient is an active simulator or whether he really believed that he could not cease trembling.

Thus it can safely be said that if there is no local exaggeration of the reflexes, no rigidity of the muscle of the lead pipe type, no signs of disturbance of cerebellar innervation, that any Tremor in which the movements are more than vibratory in extent, is psychogenetic, and is susceptible of and can be made to disappear when the proper means are used. It is also safe to affirm that a tremor which is merely vibratory is not psychogenetic, and is in all probability due to chemical modifications acting upon the nervous system, and therefore demands medical treatment as well as psychological. (For diagnostic data see Tom A. Williams, *N. Y. Med. Jour.*, March 6th, 1920.)

THE DUTY OF THE PSYCHOPATHOLOGIST TO THE MAN ON THE STREET

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WHAT the man on the street has in his mind concerning the varying concepts of abnormal psychology will no doubt always remain more or less of a mystery. Indeed, it is considered doubtful by some if any concern should be shown toward the attitudes, opinions, and working hypotheses of the lay mind. When, however, the topics are as intimately connected with the everyday activities of one as are dreams, suggestibility, memories, and, in view of the present craze and free publicity of even so-called occult phenomena there is considerable justification for an effort to probe into the opinions of the man on the street and attempt to ascertain the level of the common sense concepts that are held by him. Such information is especially of value to one interested in the application of the more firmly established principles of abnormal psychology to mental welfare.

Accordingly it was attempted by the writer to get below the mental surface of the man on the street to some degree and in a fairly accurate manner find what his common sense knowledge is with reference to the cardinal conceptions of abnormal psychology.

The most important texts designed for use in college classes or for the general reader on the subject of abnormal psychology were carefully examined and the topics which seemed to be most emphasized and of most value culled from each book. These topics were then further selected by eliminating those that were to a certain extent quibbles of different writers or schools and only those retained that would lend themselves readily to be incorporated into a questionary that the average individual might intelligently comprehend. In order to stimulate interest and to make what was wanted easily understood it was necessary to use concrete examples and situations in the questioning rather than the more abstract formulations that are found in texts. These considerations made it impossible to probe deeply into any one concept and forced the elimination of some which, fortunately are not of marked value outside of professional uses. This may ac-

count to some degree for what may be considered by some the somewhat random and unsystematic selection of topics.

The question of the method of distributing the blanks was solved by using insurance solicitors to distribute the blanks to their clients and solicit the return of the completed form. This method brought surprisingly high returns and made possible an unbiased sampling of cases. The blanks, on the whole, were carefully and intelligently completed, a not inconsiderable number of the recipients thinking the questionary had something to do with their acceptance as a risk.

There are a few over 100 forms distributed and returned but only the first 100 to be returned are incorporated into this report. This makes most of the figures given percentages. The group was composed entirely of males ranging in age from 17 to 56 years. The distribution of the age groups by decades is:

Decade	Number
11-20	2
21-30	40
31-40	31
41-50	24
51-60	3

Only three of the group had attended college and but one of these was a college graduate (attorney). The following is the distribution by education:

Education	Number
Common school (unfinished)	28
Common school (finished)	48
High school (unfinished)	16
High school (finished)	5
College (unfinished)	2
College (finished)	1

There was a wide range of trades and occupations represented by the group. In all things the 100 men may be taken as fairly representing a typical section of the average adult male population.

The subject of dreams made the most interesting and easy approach and began the questionary. All of the group stated that they dream more or less frequently. There were 63 who thought there were people who do not dream. Asked regarding the causes of dreams 72 frankly admitted they did not have any idea. The causes given by the remaining 28 may be listed as:

Cause	Frequency Given
Kind or amount of food	15
Worry, conscience, etc.	12
"Disturbed sleep"	1

It is noteworthy that on not one of the blanks were two possible causes listed.

There were 59 who thought dreams sometimes prophesy events that are to take place in the future. This is indeed surprising that over half of this group of able-bodied and otherwise sound men should believe in even the occasional prophetic import of the dream life. To the question which aimed to find out whether or not any of the group were in any way acquainted with the wish-fulfilling aspects of dreams no relevant replies were given. Only thirty-four attempted replies on this question and all of these were scarcely refined guesses. This may be due in part to the form of the question, which, in order not to suggest the reply was very difficult to construct in a desirable manner. One who is at all familiar with this aspect of the dream life, however, can at once understand the purport of the question as it was formulated so it may safely be inferred that this view of dreams is foreign to the concept of the dream held by this group.

The subject of hypnosis was next in order. Demonstrations of hypnosis had been seen by 31 of the group. These exhibitions had taken place in the theatre. Only one had ever been a subject and that was an unsuccessful attempt by a physician. There were 64 who, while 13 frankly stated they thought it all a fake, did not place any belief in the validity of the phenomena. It should be noted in passing that of the 31 who had witnessed an exhibition of hypnosis 8 considered it a fake (this term was used spontaneously and was in no wise suggested by the wording of the question) and but 6 expressed confidence in the possibility of there really being a bona fide hypnotic condition. There were 36 who believed in hypnosis. Of this number 14 thought the hypnotist possessed some extraordinary power but were unable to specify what this power was except one who simply stated, "personality;" to the remainder it remained something uncanny. Eight of those who believed in the possibility of hypnosis thought not everybody could be placed in that state and 5 specified "weak will" or an equivalent expression as an essential characteristic of a good subject.

Using the illustration Angell gives of post hypnotic phenomena[1]

[1]Angell, J. R., "Chapters from Modern Psychology," p. 131.

and asking if they thought such a thing could really happen, 2 of the 36 thought it could and 2 of the 36 thought it might, but if it did it would be a sign of mental weakness. The remainder entertained serious doubts regarding the possibility of such an occurrence.

An hypnotical case of multiple personality much similar to that given by Angell[2] was given and the degree of belief in the possibility of such a case actually occurring was asked.

20 gave no reply.
49 thought it impossible.
12 thought it rarely possible.
19 thought it possible.

One of the group had been in actual contact with a case of multiple personality at one time and was interested in reading about such cases.

The question regarding the subconscious was the most difficult to devise. The question as it was finally adopted did severe violence to several aspects that are very tenderly regarded by those who have a scientific concept of this phase of abnormal psychology but it was necessary in order that those to whom it was addressed would not confuse it with simple memory and would understand more clearly the aim of the question. The answer to this question was either yes or no. There were 12 who replied in the affirmative and who had a more or less vague concept of the subconscious. The reason they believed there was such a thing as the subconscious was because 2 had read about such a thing and the remaining 10 retrospected and applied the question to their past experience citing the instance that led them to believe in the existence of the subconscious. It must be admitted that most of this evidence was decidedly unseaworthy.

So far the results have been mainly negative. There have been but slightly developed concepts where they did exist and in most cases they have not existed, or if they have it is only in a badly distorted condition mutilated almost beyond scientific recognition. When we pass to occult manifestations, however, the tendency is in the other direction. Only 3 questions were asked regarding supernatural manifestations. These concerned spiritualism and telepathy.

"Do you think the spirits of deceased persons live and *can communicate with us?*" There were 58 of the group who replied in the affirmative! Their belief in this was justified as follows:

[2] *Ibid*, p. 138.

54 had read of instances of communication.
3 had dreamed of the deceased.
1 had actually been in communication.

The negative replies totaled 39 and the remainder were non-committal. All but 2 of the 58 believed there were only certain persons who have the power of getting into touch with the spirits of the departed and hold communion with them.

The testimony for telepathy was not so overwhelming. Thirty-three thought ideas could be transferred from one mind into another without any external aid. One person gave as the cause for his belief a rather unusual coincidence to which he was a party, but the 32 took refuge in the reading of certain articles for their justification.

None of the group had read anything about hypnosis or multiple personality. The two who had attended college had read a little regarding the subconscious in connection with a course in psychology. Dreams had been the subject of an article in a Sunday edition of a newspaper which was read by one and 3 had read in an advertising folder concerning dream interpretation. Compare this meagre amount with the reading which was actually forced upon their attention centering about the occult phenomena.

It will be frankly admitted that the concepts entertained by this group regarding spiritualism and telepathy are injurious. It must also be admitted that in general a greater faith was shown in the occult phenomena than in the facts known to abnormal psychology. To a certain extent this is in itself harmful. The fact that a large amount of space in certain newspapers and periodicals is featuring hypernatural things tends to lend credence to such impossibilities. Abnormal psychology, on the other hand, tends to remain more academic and avoid all sensationalism. There is a fertile field for semi-popular articles dealing with different phases of abnormal psychology so written that they will catch the eye and the mind of the man on the street. The function of these would be two-fold; they would aid in up-rooting certain unwarranted concepts and would add to the stock of working hypotheses. The psychopathologist and psychologist should avail themselves of the opportunity to relieve their minds of controversal points and produce something that will aid in building fuller, more accurate concepts of their science in the mind of the man on the street. So long as abnormal psychology remains a purely academic discipline it is not fulfilling its greatest mission.

REVIEWS

PSYCHOLOGY AND PEDAGOGY OF ANGER. Roy Franklin Richardson. (Educational psychology monographs, No. 19); Warwick & York, Baltimore, 1919. 100 pp. Price $1.25.

CHILD'S UNCONSCIOUS MIND. The Relations of Psycho-analysis to Education; a book for teachers and parents. Wilfrid Lay. Dodd, Mead & Co., New York, 1919. 329 pp. Price $2.00.

PSYCHOLOGY OF THE NORMAL AND SUBNORMAL. Henry Herbert Goddard. Dodd, Mead & Co., New York, 1919. 349 pp. Price $5.00.

ABNORMAL Psychology is by tradition the province set apart to deal with characteristically "queer" reactions of the human mind, such as dreams, emotional disturbances, manifestations of the subconscious, prodigies of memory and all other sorts of anomalous phenomena which so-called Normal Psychology has overlooked as somewhat too disturbing to the smooth course of its academic teachings. In academic circles the "abnormal" psychologist is—as the unfortunate term would imply, something of a curiosity, something *hors ligne,* and, as such, considered unable to "toe the mark" of the ordinary cut-and-dried University psychology. For this reason, perhaps, the pursuit for their own sake of the subject-matters of Abnormal Psychology has afforded its devotees neither a settled intellectual habitation nor a definite scientific name. Yet these gypsies amid the staid hosts of psychology have, by dint of comparisons, obtained from the remoter fields of mental anomalies, a dawning suspicion that their own more inclusive point-of-view may still prove worthy to inform the particularistic standpoints of the psychiatrist, of the psychopathologist, of the psychoanalyst, of the behaviorist.

Indeed, unless nothing at all can be inferred from the history of science as a whole, Abnormal Psychology, with its wider outlook, should furnish us with a sort of *philosophia prima* or summary philosophy that would supply general axioms for the more particular propositions of the above mentioned specialists. That Abnormal Psychology should develop a characteristic psychological *critique* may be illustrated by a review of these three books, which by their diversity are a challenge to us to take a unified view of the phenomena they testify to.

The roaming and hardy aventurers who go caravanning through the clinic, the psychological laboratory, the school room, the institutions for the feeble-minded, the insane hospital, the religious revival, the rehearsal room of the child prodigy, and the open places where "crowd psychology" shows itself may be presumed to personify Abnormal Psychology as such. They possess a sort of resultant personality with an outlook of their own and a cast of thought peculiar to themselves. Hence, we may speak of the student of "queer" reactions, of mental anomalies, as the Anomalist, a man or woman of definite experience in this field and opinions born of these same experiences. Indeed, the Anomalist should,

ideally, be a person with a balanced view of all the phenomena of Abnormal Psychology—master of all, but slave of none.

From this standpoint of Abnormal Psychology, Richardson's slender and unpretentious volume does not seem very adventurous. But when contrasted with the ordinary cut-and-dried academic presentations of mental Anomalisms—if we may so speak—it is an innovation. It departs from conservative tactics by virtue of dealing with human motive in its more recondite phases, by spreading upon the tablets of scientific record some things really deep in human nature.

That is to say, Richardson's subjects have revealed their vexations, their moments of annoyance, their little—and some of their big—reactions to the pains that have been put upon them in "situations stimulating anger."

The interest of Richardson's "Psychology and Pedagogy of Anger" is, unfortunately, very much obscured by the almost damning deficiencies in typographic arrangement. If we dip here and there in this booklet of one hundred pages, we shall find ourselves somewhat lost owing to the lack of running heads and section titles, needed to make the subdivisions of the topic clear. For this reason, the full tableau of Richardson's topic analysis (largely omitted in the printing of his book) may be given here (p. 413) to show the essential nature of his contribution.

Richardson considers the emotion of anger as having a beginning, a middle or climax, and an after-effect—a simple enough idea, valuable not so much for its novelty as for the fact that it is a subdivision of the topic that insures a further ramification of analysis; thus guaranteeing more intensified attention to the phenomena of anger.

The author's method may best be told in his own words, lifted bodily from page six as below:

> METHODS.—The method in the present study has been to observe anger introspectively as it appears in every-day life. Ten graduate students of Clark University and two persons outside of the University volunteered to observe their emotions for a period of at least three months and report to the writer each day from the notes of their introspection. . . . They were asked to observe the conscious fore-period before the emotion begins, the development of the emotion, the disappearance, the diminution the consciousness after the emotion has disappeared, which is recognized as having been influenced by the emotion. . . .
>
> Ten of the observers were graduate men students of psychology. Seven of these had had considerable experience in introspection under controlled laboratory conditions.

It is from the standpoint of the Anomalist, the student of anomalies, as we have called him in previous reviews, that the study falls short. And this comes about from the fact that the subjects in Richardson's analysis did not meet with the extremes of emotion which serve to bring out the deeper characteristics of instinctive reactions, like anger. He has not adventured far enough into the realm of study that is characteristically that of the anomalist, and for which

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PSYCHOLOGY AND PEDAGOGY OF ANGER

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subjects can be obtained not among a picked class of college students (particularly graduate students) but in the slums, in the home of ill-controlled personalities and in the psychopathic clinics of hospitals. Richardson has collected what came to hand and analyzed it with sufficient minuteness. He goes deep enough into the details of how Subject A and Subject B felt, but he does not gather these various expressions together into a comprehensive picture of anger. In other words, his collection of anger phenomena is extensive and varied enough so far as it goes, but his conclusions suffer markedly from the tameness of the situations that stimulated anger, as dealt with in these reports of introspectors.

The demonstration of the anger-mechanism operating at full blast is thus deficient in Richardson's study. None of his subjects reveals that anger which comports with "battle, murder, and sudden death," which are, after all, phenomena of first rate interest to the Anomalist. Yet his study has the merit of dealing pretty exhaustively with "envy, hatred, malice and all uncharitableness," which are by-effects of anger and part of its phenomena.

It is in the third section that Richardson's adherence to normal material (only in the sense that his subjects are normal) makes itself felt. He would have more to say in Chaps. 3, 4 and 5 about the aftermath of anger (Chap. 3 Disappearance of Anger, Chap. 4 Conscious After Effects) if he had dealt with a serious quarrel among his subjects and had followed the conscious after-effects into the realm so familiar to the anomalist in psychology, of the grievance, the mania for revenge and so on. He might have added to Conscious After-Effects (Chap. 4) a third section entitled (as the anomalist would have it) "Feud, Vendetta and Neurosis." Even with his normal subjects, he might have found more to say about the subconscious aftermath of anger—say, from *dreams*.

From the standpoint of broadening the appeal of Abnormal Psychology, Richardson's deficiencies are more than made up for by the fact that there has been completed an outline and study of emotion, looked at from the angle of established psychology. Richardson has not slighted the prevailing tendency to study mind from the standpoint of *situation and response,* and he has made a very suggestive delineation of the "situation that stimulates anger."

He has also contributed, in the second section, to what may prove to be a valuable compromise between the ideals of the radical group in psychology known as behaviorists, and those who are not satisfied with the rigid exclusiveness of behaviorism, by entitling his second chapter: "The Behavior of Consciousness."

If we admit "behaviour of consciousness," then the way is open for a complete reconciliation between those who make behaviour their object of study and those who still cling to "introspection." One cannot, of course, exactly compare Richardson's gathering of examples showing the "behaviour of consciousness" in anger with the studies of Cannon showing the "angry" behaviour of say the adrenal gland in the case of a cat that is being barked at by a dog. But—with the exception of the lack of the printer's art to bring out the intel-

lectual values—Richardson does give particular attention to exhibiting the effects that go to make up the response of consciousness to anger situations.

In general, the plan of the study of the "Behaviour of Consciousness" is worthy of imitation by other students who may wish to continue an analysis of emotion from the psycholexic standpoint, that is to say, as the derivation of the words imply, emphasizing the variety and scope of facts "gathered" (legomen) rather than what can be "measured" (metro).

The importance of Abnormal Psychology to education is brought to our attention by Richardson's animadversions in Cap. 5 concerning the emotional function, as also in his preface by his references to Aristotle. The question is inevitably raised in one's mind as to whether a more intensive study of anger and other emotions would not also represent an intensive contribution to education.

Richardson's work may be called an innovation because it may help other academic psychologists (i. e. affiliated with universities in methods or employment) to realize that they, too, can handle with dignity and without the much too-feared luridness of Psychoanalysis some other one of the human passions. And although Psychoanalysis is supposed to have paid more than enough attention to the sex life, it would be amusing to have the world discover the inadequacy of the Freudian cult, if a psychologist in academic circles should have the courage to publish on the plan of Richardson an analysis of the falling-in-love experiences of say twenty selected subjects in either sex at a co-educational institution.

THE STRIKING thing is (for the Anomalist) that, in these three books, not only does Richardson stress Aristotle's principle of the education of the emotions, but that this suggestion forms the main current underlying Wilfred Lay's work on the "Child's Unconscious Mind" and also is frequently adverted to by Goddard, especially in his conclusions to "The Psychology of the Normal and Subnormal." It is the topic now coming to be called "mental engineering" or better "mind husbandry." Thus we see exemplified the striving of the constructive temperament of the educator, who must rely on something not altogether scientific. For we may truly say of Education what Morton Prince has said of Re-education (in the neurosis), namely that it is a task of Art, not of Science.

These three books may thus be appraised—and praised—as weighted mainly with constructive thought, looking toward the building of character, with particular reference to the emotional life. Our authors echo, almost word for word, the statement of Descartes, when he penned the opening sentences of his "Treatise on the Passions":—

"There is nothing more clearly evinces the Learning which we receive from the Ancients to be defective, than what thy have written concerning the Passions. For although it be a matter the understanding whereof hath ever been hunted after, and that it seems to be none of the hardest, because every one feeling them

in himself, need not borrow foreign observations to discover their nature. Yet what the Ancients have taught concerning them, is so little, and for the most part so little credible, that I cannot hope to draw nigh truth, but by keeping aloof off from those roades which they followed. Wherefore I shall here be forced to write in such a sort, as if I treated of a matter never before handled." (P. 1. "The Passions of the Soule," London, 1650).

It follows from this precedent in the study of the emotions that the three works of Richardson, of Lay and Goddard, are in some sense, more or less unwittingly harking back to DesCartes' psychology of the emotions and attempting to resume this study in the same spirit that has made the Cartesian treatise a monument of suggestiveness. Let us hope that the suggestions in these works mature better and secure more general consumption than similar progressive ideas have obtained in the last three centuries.

DesCartes himself proposed that we advance toward a definite goal of improving the nature of man by mind-husbandry, not through the archaic devices of the ferrule on the pupil's hand or the rope's end on the sailor boy's back, but through a technical process deliberately in keeping with available knowledge of the nervous mechanism. This is the crucial point; and this old idea of mind-training must be continually refurnished with its modern implications, as these three books in their measure do.

This progressive technique of training has indeed already been endowed by Dr. Morton Prince with a definite name. He designates the scientific development of habits and the training of the emotions by the name of "complex building" (See "The Unconscious," 1914). This comports with a clarified conception of the elements that go to make up a mental reaction and a visualization of the operations in the nervous channels or neurograms. At the same time, he recognizes that the morbid complexes on which the psycho-analytic school have written so strikingly are not to be set apart from normal mechanisms in which "Complexes" (as normal systems of memories or habits) may be operating in less lurid fashion.

The author of "The Child's Unconscious Mind" is more deliberately concerned with the improvement of methods of training the human being, than the other two writers. He does not attempt a book in that tone of laboratory experimentation which Richardson maintains throughout, nor does he assume to be writing a text-book as Goddard does.

The sub-title is "The Relation of Psychoanalysis to Education, a Book for Teachers and Parents." As such, it may be recommended to both these classes of readers, provided they will take it with a grain of salt. The necessary sprinkling of salt should come from the continual remembrance that this writer is essentially a convert to the well-known Freudian theories, and that he is trying to give them fruitful application in his own particular field, which is that of Education. As the author of Man's Unconscious Conflict" he gave a pretty expression of the Freudian viewpoint concerning the more inaccessible regions of the

soul. He described an Olympus, as it were, of the Nervous System where the various psychoanalytic gods and demi-gods continually disport themselves under the name of Libido, Endopsychic Censor, Repression, Sublimation, Regression and the like. And, in true mythological style, he described their disputes for the governance of the mind—the great occasion of Man's Unconscious Conflict.

With this successful beginning made, it was natural that Lay should wish to carry over his interpretation of the Unconscious Conflict into the field of child training. In any case, the anomalies of mental growth are best exhibited from the angle of child-study. His introduction shows this very clearly:

"A deeper knowledge than ever before is now possible concerning the nature of the child, and with it the nature of the problems of education."—"The new knowledge is a knowledge of a hitherto unexplored, or at least unsuccessfully explored, stratum of the mind, as evident in the child as in the adult, and in the child more controllable than in the adult, because more fluent, less fixed and crystallized." (p. 1).

His conception of the "method of the newer psychology" (p. 1) appears, however, rather perfunctory, for what he himself applies is not the standard method of Science, but distinctly the dogmas of Psychoanalysis.

THE CATACOMBS OF THOUGHT

Touching the technique of complex-building we may question whether Lay can justify the psycho-analytic methods of approaching this task as sufficiently rigorous. In this field, we face a scantiness of well-thought-out principles of SYNTHESIS, similar to the deficiencies of ANALYSIS that Descartes contemplated about A. D. 1640, when he wrote his "Passions de l'Ame." Indeed Abnormal Psychology is only just now bringing into clearness the conception of the Automatic Self which Huxley's Essays brought to the attention of scientific thinkers, after Darwin's researches had revived the topic of Animal Automatism.

If Lay adhered to the mainly physiological conceptions of the Automatic Self, in the style and mode of Thomas Huxley, instead of plunging into disquisitions on the varieties and combinations of conscious, subconscious and unconscious processes, he would have left an impression of greater clearness upon the reader. As it is, his dealing with the Subconscious is marred by an almost amusing adherence to old-style philosophy, in place of modern physiology—which he scarcely touches at all. This is indicated by his ringing the changes on all the possible combinations and permutations of Subconsciousness and Consciousness that could conceivably go to make up a given mental state. And he accomplishes very little thereby, except a good imitation of an old-style exercise for turning a syllogism every-which-way! Thus he takes the present provisional term "the Subconscious" and its derivatives too seriously.

Some day, let us have a round-table conference where leading gentlemen

interested in the sub-cellars of the mind shall come to an agreement to intend or *mean* the same thing when they use the same word. As yet neither we nor Lay possess the advantage of clear terms on this topic.

There are other things in his book that he deals with much more successfully than with the attempt to give a systematic view of the relation between consciousness and subconsciousness. In practical things like the mechanism of blame he "comes out strong" with cautions about the teacher's attitude, of which an instance is the following:

"The attributing of blame to anyone is concentrating attention on the destructive aspect of the act, magnifying it in a way gratifying to him, and satisfying his desire for personal attention, blaming anyone for what he has done once or habitually does is a very irrational procedure for a teacher who believes that many acts are caused by unconscious thoughts, for the reason that no person who has not been introduced to his own unconscious and shown a method of controlling it, can be held responsible for what it makes him do. This fact does not release a pupil from real responsibility for his conscious acts done from conscious thoughts. It only places responsibility for certain errors where responsibility really belongs, if causation by the unconscious thoughts involve any responsibility." (The Child's Unconscious Mind, p. 125).

The author's illustrations of blunders and lapses show us that he is at home in Psychoanalysis; he gives enough illustrative material to make his text interesting. In delving into unconscious mental processes he tries to give personal observations whenever possible. His work is addressed to teachers and, so far as lies within his power, he supplies *definitions* to make the study easy. He earns our gratitude in this way by his effort at definiteness, and, further, by avoiding the excessive reliance of psychoanalysts (for their illustrations) upon citations of history and literary works and upon quotations of poetry.

THE QUESTION OF VERBALISM

Lay's difficulty is that he has too much to say: more than our inadequate science can accommodate in its present vocabulary. This, indeed, is unfortunately the condition of affairs that compels Lay to beat out a few simple Freudian conceptions into a pie for the whole school tea-party. Considering the difficulty of such a thing he does it very well, but the crust breaks down every now and then; thus, actually the weakness and lack of cohesiveness of the Freudian formulations are very well depicted. He does furnish a sort of a language, or marks to call things by, that can be made to contain some very helpful ideas in child-training.

He deserves to be commended for making a striking practical presentation, on the platform of a somewhat shaky scientific cult like Psychoanalysis.

Of course the great trouble (and this book shows it up) is that the Freudian conceptions do not really fit very well into the scheme of normal life: "Sublima-

tion" is an involved conception, obscuring the fact that what it really implies is re-education out of bad habits; lapses and blunders do not always signify trouble in the "unconscious" wishes," but may be mere fatigue (and, as such quite differently of interest to the teacher); Resistance and Transference are one-sided notions that the teacher can take too literally from psychoanalysts. In result, by taking too much for granted from Psychoanalysis Lay's system for explaining the unconscious mental life is weak in many spots, from the standpoint of pure science.

It remains to be seen, however, how long this system will help us when the capacity is tested beyond its present limited requirements for satisfying the beginner. But even if Lay's application of the Freudian method to Education should be temporary it will still have served some purpose in bringing the unconscious life of the child to the fore-consciousness of teacher and parent. The real application of Abnormal Psychology to education is a long way off and when it comes it will have to be something more mechanistic than Lay has been able to supply for complex-building.

To many this book will be a "revelation" from the fact that it asks the parent and the teacher to conceive at all that there is a "Hinterland" to be explored in the mind. (Lay quoting H. G. Wells).

Teachers may well use it as a *vade mecum* in exploring the "deeper strata" of their pupil's mind. Systematic correctness is not the first need at this stage of Abnormal Psychology. The main thing is OBSERVATION AND AGAIN OBSERVATION of mental phenomena, of what lies back of a given act in the schoolroom or on the play-ground. The volume abounds in sincere searchings after the essential and informative truths of human nature in its below-the-surface sense. And the reviewer pays his respects to the earnest purpose that underlies this résumé of what Psychoanalysis can suggest to the teacher.

ANYTHING that Goddard writes is likely to be of interest: has not the author of "the Kallikak family" (something everybody can understand) earned the right to many a success d' estime, if nothing more?

His pronouncements in normal and subnormal psychology adopt a tone of finality that is fitting to the role of a text-book. Goddard seems, in last analysis, to be no less interested in complex building than Lay. His preface states the important things to be considered as (*a*) concept of mind unity and (*b*) study of the emotions. But whereas Lay essentially presents to us a study of the way and the form in which Complexes have BUILDED THEMSELVES into the child's consciousness or subconsciousness (as the case may be), Goddard is concerned in trying to make us visualize the physiological conditions. That great tangle of fibres in which complexes can be developed is discussed by him with surprising directness, in the first chapter. This leads directly to the "subnormal" and the topic of how the subnormal individual's brain finds itself limited in constructing enough complexes for the business of Adaptation. This may prove a more

than usually vivid warning for too sanguine practitioners of complex-building, or re-education.

In a sense, Goddard apologizes in advance for any misfit between his text-book and the province of the Abnormal in general by a title narrowing it down to the SUBNORMAL branch.

It is a textbook that is likely to hasten the popularization of Abnormal Psychology as a science destined to take more closely into account than even Goddard does the relation between mental anomalies and the nervous mass. But that Neurology is not ready for even his degree of simplification is more than evident.

Goddard's slashing way of settling involved strands of opinion gives refreshing support to the dictum of a very successful class-room exponent of modern physiology. We quote from memory a remark of Dr. Burton-Opitz of Columbia University:—

"I want them to understand Physiology and not simply be able to talk about it. I want them to get into the spirit of analyzing the bodily mechanism. And to simplify things (whenever I think it will help) I tell the story *wrong;* and, then when they are ready for it, I go back to the topic and put in the corrections."

This is what Goddard in a measure does. He treats many things on this plan that the "end justifies the means." The University laboratories are likely to protest against some of his too ready simplifications.

The "philosophy of the organism" is well-represented by Mosso's "Mechanism of the Emotions" in the Appendix. But the relative value of different trends of opinion and different modes of approach to the problem of Psychology receive scant attention. The Appendix also contains an excellent Bibliography, well arranged. The summaries to be found at the end of each chapter are a valuable addition to this text-book; and the illustrations throughout are good, with explanations suitably attached.

Although headed for simplicity, Goddard omits a very possible simplification in his language by failing to employ the word *neurogram,* already sufficiently made known by Prince; he uses the term *neurone-pattern.* This conforms of course to the employment of the term *neururgic pattern,* by Henry Rutgers Marshall, and to the further use of a similar term *"action pattern"* by a psychophysiologist like W. B. Cannon, also the term *behavior pattern* by the Behaviorist School.

Goddard could very well have increased the definiteness of his presentation by building up his conception of mental action on its physical side in harmony with the "neurogram concept" of Prince. It could be linked up with the behavior of consciousness. Even as it is, with a little labor of cross-referencing to other works on the physical basis of cerebration, we could easily develop Goddard's text-book into an excellent stepping stone by which the neurographic conception might cross the threshold of classroom consciousness.

Goddard has treated too cavalierly the sacro-sanct question of human T-H-O-U-G-H-T which he spells T-H-O-T. When we first saw this barbarism at the head of two of his chapters, which deal with the process of mentation, we

felt suddenly transported to the realm of tomfoolery. This is a sample of the startling practices in "cutting corners" that confer upon this book a simplified-spelling aspect—an aspect that arouses an unnecessary distrust of the scientific steadiness of the author.

From the standpoint of the Anomalist, who is delighted to see the Gordian knots of psychophysical parellelisms irreverently cut in twain and who is anxious to see the chariot of academic Psychology used as a vehicle to garner the fruits of experiences in the province of the Abnormal rather than treated as an exhibit in a museum, it would seem that Goddard had constructed a very good text book. In common parlance, it ought to make professors no less than students "sit up and take notice."

IT IS for what these works look forward to that they are valuable rather than for such finished products as they have to offer. The reader will have his mind prepared for the day when Abnormal Psychology shall have become a science more exactly and pointedly adjusted to its task. So far, they suggest with one voice although in quite different tone-qualities what this task should be: the correction or rectification of aberrant human thought and character. In different degrees, they focus upon the fundamental theme of the control of the emotional life. This is a subject left too much to the usually bootless presentations of novelists and dramatic writers, or moving picture producers.

Interest in the emotions is still in its spectacular phase and, as Richardson reminds us, the education of the emotions has been advocated for ages without any distinct advance of scientific technique being registered in this domain.

Why the emotions fail to enter the realm of scientific management and educational piece-work, in human engineering, may be gleaned by perusing these three books. Each contribution is a partial response to the inquiry:—

Richardson, by his reports of introspectors, wittingly and unwittingly shows what limitations there are to the knowledge to be had about even one emotion, unless one is willing to go "out of bounds" academically and follow the methods of the psychological gypsy we have supposed the enthusiastic Anomalist to be. One must study emotion ON THE SPOT in real life, not merely from a laboratory *desk, with data handed in by subjects—self-consciously such.*

Lay shows us unconsciously that in spite of the much more grasping methods of fact-collecting adopted by psychoanalysts and their ilk (who deal with emotionalized people in the raw individually and not in statistical masses) still the intellectual discipline of workers outside regular Psychology fails to co-ordinate the data of Abnormal Psychology.

Goddard, (being accustomed to putting things in words of one syllable for and concerning the feeble-minded) as if careless of fine distinctions, sweepingly lays down a concrete foundation for Abnormal Psychology by which the student may hope to place on a sort of common ground the various offerings that crop up in one or another of the special fields of Abnormal Psychology.

L. H. HORTON.

DYNAMIC PSYCHOLOGY. By Robert Sessions Woodworth, Ph. D. Columbia University Press, New York, 1918. Pp. 210. Price $1.50.

Professor Woodworth begins this revision and enlargement of his Jesup Lectures for 1916-1917 by presenting a brief description of the many streams of thought and investigation that have united to form the modern movement of psychology. As one of the oldest, most independent, and influential of the original sources from which this movement has developed, he would place abnormal or pathological psychology, as illustrated by the early work of Pinel and the modern contributions of such men as Binet. He concludes that "brass instrument psychology," to use an expression of William James, is but a small and overemphasized part of the whole modern movement in this science.

In a lecture on "The Problems and Methods of Psychology" the extreme behaviorist is criticised for wishing to exclude a legitimate method and object of study and, on the other hand, the extreme introspectionist who would exclude the study of behavior by objective methods is considered equally at fault. Both methods of attack have yielded rich results. It is a question of emphasis. In reality, much of the experimental work done from the time of Fechner to the present has really been on human behavior and only incidentally, if at all, on consciousness. If certain secondary criteria are excluded, there is practically no difference between the simpler forms of introspection and ordinary objective observation. However, according to Professor Woodworth, the description of consciousness from the introspective or behavioristic point of view is not the real aim of the workers in this science. From Locke, Berkeley, and Hume, to the present-day workers "the actual interests of psychologists, as revealed by the problems taken up, have centered on the problem of cause and effect," *i. e.*, dynamics, the same phase that interests the beginner in psychology. Consciousness and behavior, separately or together, do not provide a coherent system for the casual treatment of the mental side of vital activity.

For dynamic psychology there are two problems, that of "mechanism" and "drive,"—how is a thing done, and what causes it to be done? While "drive" or "motive" is usually considered as something external, Professor Woodworth, by employing the physiological facts of reinforcement and inhibition, prepares the way for a conception of inner motive. Reinforcement and inhibition show to him conclusively that one nerve center is able to furnish drive for another. "Thus, though the drive for nerve activity may be ultimately external, at any one moment there are internal sources of influence furnishing drive to other parts of the system." Therefore, "drive" is not essentially distinct from "mechanism," and it is argued that any mechanisms, particularly those directed towards consummatory reactions, come to act as drives.

In the third lecture or chapter, "Native Equipment of Man," which is perhaps most characteristic of this contribution to dynamic psychology by Professor Woodworth, native equipment is held to include "aptitudes or 'gifts' for certain activities, or for dealing with certain classes of things." These native capacities

are set off from instincts in that they do not have ready-made reactions to stimuli. Hence these mechanisms are only gradually developed through the experience and learning of the individual. Professor Woodworth stresses the important driving powers of these mechanisms developed on natural capacities of the individual for dealing with certain classes of objective material, *e. g.*, machinery, mathematics, and music, and would list them as belonging to the prime movers of human action, contrary, he thinks, to the commonly accepted view of motivation. In fact, he states that the definite aim of this book is to show how such mechanisms are powerful drives and that any mechanism, once it is aroused, is capable of furnishing its own drive and also of lending drive to other connected mechanisms, and this wholly aside from the "overhead power system of the instincts." Incidentally, this point of view leads him to insist that the organism is not naturally inert to the high degree signified by certain psychopathologists.

In lectures on "Acquired or Learned Equipment," "The Factor of Selection and Control," and "The Factor of Originality," Professor Woodworth further develops his conception of drive. It is wholly impossible for him to believe that the industry of the genius is driven from hunger or sex or rivalry or any of this class of prime movers. The attitude of play characteristic of genius is cited as demonstrating that the activity contains the drive within itself.

Experimental psychology has treated of mechanisms more than of drives. On the contrary, psychopathology concerns itself more with drive than with mechanism. Consequently the author finds much in "abnormal behavior" that is of importance for his view of motivation. The feeble minded are not only lacking in drive but also in mechanism, and since these are not fundamentally different, if they can be taught mechanism, they will thus be provided with motivation. The delusion of the paranoiac, initiated by some normal (instinctive) drive, becomes crystallized through the process of trial and error and comes to act as a drive, on its own account facilitating and inhibiting actions and perceptions that would otherwise be possible but not probable.

The author finds many reasons for disagreeing with the Freudian psychology and carefully criticises its conceptions of suppression and sublimation. Although regarding the sex impulse as a prime mover, he is convinced that if this impulse alone were in action, the resulting behavior of the organism would usually be much more direct. Many social amusements undoubtedly draw the sex motives into their service to add spice to play, but without other drives even the amusement of dancing would not exist. Since this is true of behavior that is obviously sexual, or may be given such an interpretation, "it can scarcely be less true in behavior that seems to be fundamentally driven by quite other motives." If the mechanisms developed by the abnormal individual, whether genius or insane, thus prove capable of supplying drive in and of themselves, it would seem that it is characteristic of all mechanism whether with abnormal or normal individuals that they should become drives, and consideration of them as such is, he believes, of greatest importance for dynamic psychology.

This nicely made and very acceptable volume by Professor Woodworth is written in a charming style; it has been rendered convenient by references and index, and will provide a useful auxiliary text for courses introducing general psychology.

Nutrition Laboratory, Boston. W. R. MILES.

HUMAN PSYCHOLOGY. By Howard C. Warren, Stuart Professor of Psychology, Princeton University. Houghton Mifflin Co. Boston, New York and Chicago, 1919. Pp. xx, 460; figs. 68. Price, $2.75 net.

By way of philosophic contrast, the professor at Princeton has given the world a text-book of psychology "with a soul" or at least a mind—a mere detail which Professor Watson's materialistic system tries to do without, as we have just seen above. The difference in the two views (and the matter is suggestive of the failure of the master-behaviorist's definition of psychology) is expressed by two sentences (from page 29): "Mental life consists in the adaptations of an organism to changing conditions of its environment, and the processes which bring about these adaptations constitute experience. Experience includes behavior and consciousness—behavior being the action of the creature upon his environment, and consciousness an effect of environment on the creature." What further could be sought for or declared? The organization of organisms is two fold, vital and mental, the latter including among other functions, rational action; in man mental life "may even replace the vital life as the chief factor of his existence." In the very humble opinion of the reviewer this attitude represents the rational ultima Thule of the infection (by no means an epidemic) with the Bacillus behavioristicus.

The twenty-three chapters (four in the appendix) of this excellent text by the well-konwn editor of the *Psychological Review* are titled as follows: The science of psychology; the organism; the neuro-terminal mechanism; physiology of the neuron; stimulation, adjustment, and response; behavior, (two chapters); conscious experience; the senses (two chapters); the components of mental states; primary mental states (two chapters); secondary mental states, (two chapters); succession of mental states; attitudes; character and personality; organized mental life; the mind-body relation; mechanism and purpose; neural activity; and the visual process. Directions for performing the exercises. Index (adequate because detailed). Twenty-three "tables" add greatly to the value of the book because they are systematizers and therefore fixers of the learner's concepts: "Classification of science; vital and mental functions; human reflexes; human instincts; instinctive tendencies of man; progress of learning; fundamental operations of conscious experience; spectral lines and color range; complementary colors ; classes of odors; threshold of intensity for taste; classification of the senses; classes of mental states; values of the Weber constant; secondary mental states; human emotions; classification of sentiments; classes of associations; human attitudes; human dispositions; higher human attitudes; classification of temperaments; and visual phenomena."

So famously has Professor Warren stated certain special conclusions regarding mental life which his book has aimed to bring out, that perhaps we can not do better than to quote them in full. They read as follows:

"(1) The mental life of man and other creatures depends upon the presence of an *inherited neural mechanism.* Every conscious experience is accompanied by activity of the nervous system. Conscious experiences, or mental states, may be regarded as the subjective aspect of nerve activity. The complexity and effectiveness of these neural processes depend upon the degree of structural organization of the inherited neuro-terminal system. In man this system is highly organized; it is derived jointly from two parents and is due in part to each.

(2) Mental life depends also upon the presence of an *active environment* which operates upon the neuro-terminal system through the process called stimulation. The data which enter into experience are derived either directly or indirectly from stimuli outside the body, the internal stimuli being traceable ultimately to previous external stimulation. In man the social environment is an important factor in developing the higher phases of mental life.

(3) Mental life depends, accordingly, upon the *interaction of a creature and his environment by means of a neuro-terminal system.* Mental activity may be regarded as the stimulative effect of the environment upon the creature, with the resulting responsive effect of the creature upon the environment brought about by neural processes.

(4) Each specific manifestation of mental life may be studied as a sequence of stimulation, adjustment, and response; this chain of processes constitutes behavior. The most important factor in behavior is the *adjustment process;* this may be studied by the human individual through observation of his own experiences. Self-observation is examination of the central adjustment phenomena as mental states, or conscious experiences.

(5) The types of mental states found in man are a *gradual growth.* Even our attitudes, character, and personality undergo development during our life-time. They are not implanted at birth, but are formed by degrees. While the mental states which appear in the adult human individual may be investigated separately as static phenomena, the organization of mental life which produces them can only be adequately explained in genetic terms. Mental organization develops gradually in each individual; its structural basis has evolved step by step in race history.

(6) The evolution of every structure and of each type of process concerned in mental life depends upon its utility. In order to survive, an organism must be *adapted to its environment.* Like every other biological product the neural mechanism, by whose operation experiences are organized, is believed to have arisen originally through some chance variation—that is, through some new combination of factors in the germ cells. The persistence of the new structure is due to the fact that the individuals which possess it are more fitted

to survive than those in which it is lacking. The same is true of the various forms of experience. The higher types of mental states (such as thought and language) which have grown up and established themselves in the human species, have arisen and persisted because they proved useful in mediating between man and his environment."

Altogether, this work is the most inclusive, the most complete, new text-book of psychology known to the present reviewer, vieing with Titchener's in this respect. It appeals strongly to the practical pedagogue because it is arranged on the principles of the easiest and truest acquirement. Even the saving and important touch of humor is present—the blessed ten-in-one oil which makes learning a pleasure, despite the opinion of certain pseudo-dignified snobs to the contrary. The illustrations are excellent and some of them original. Lists of references extend the influence of each chapter. The table of contents is complete.

Many readers, especially they who are in contact with many abnormal minds, will miss from this work, so timely in other respects, adequate emphasis on the dynamic point of view. Freud's views are briefly discussed, but the subconscious aspects of mind, as presented by Ribot, Bergson and sundry American writers, is given scant discussion. One looks in vain for the kinesthetic basis of perception in general (looking, listening, sniffing, tasting, etc.), although nothing is more essential for a real understanding of the teleology of organism, no one point more indispensable to the sanction of the flesh. The dynamic view-point is present, but the static notion somehow gets more notice than it deserves. Inhibition is scantily discussed; on the other hand the more or less meaningless plan of the areas of the great cortex is given in some detail, while the layer-hypothesis is ignored.

On the whole, the present reviewer has no hesitation in believing this work the most complete text-book of psychology for the use of all who need a real text-book of the science that has been recently placed on the market. The neuropsychiatrist and the psychopathologist any more than the college student can not afford to long remain without its far-reaching substance.

George Van Ness Dearborn.

Sargent Normal School.

Nerve Control and How to Gain It. By H. Addington Bruce. Published by Funk & Wagnalls Company, New York and London, 1918. Price, $1.00, net.

H. Addington Bruce has here collected together and published in book form, some of his "Daily Talks," on various aspects of the subject of nervous and mental health, which have appeared in the columns of the important group of American and Canadian evening newspapers known as the Associated Newspapers, with their tremendous circulation. His talks deal, for the most part, with practical suggestions as to prevention and self cure of nervous and mental distress,

which, as he says in his preface, reduces itself to thinking healthfully and learning to live healthfully.

There are, in all, fifty-eight (58) "Talks," which are brief and to the point, and on a large variety of topics. What he says is interesting, illuminating, and for the most part true. He discusses such various subjects as "What Nervousness Is," "Signs of Nerve Strain," "Habit and Nervousness," "Hurry Means Worry," "Silence and Relaxation," "Colors and Nerves," Posture and Character," etc.

A few of the points he mentions may be enumerated. "Nervousness is not a disease in itself. It is, rather, a symptom of ill health from any one of a number of causes, some of which are primarily physical, others primarily mental." One must ascertain "the precise cause of the nervousness in each individual case and give treatment appropriate to the particular case." "Early training of the will power, with special reference to control of the emotions and suggestibility, is therefore the surest prevention known of the functional nervous diseases." (Very good, indeed).

He believes in the existence of so called "habits pains," of subjective nature. In this, I am convinced, he is in error. I believe I have proven conclusively, to my own satisfaction, at any rate, in a paper entitled "Are There Subjective Pains?" the Medical Record, August 25, 1917, that pains are always of peripheral origin, and that there cannot exist subjectively induced, ideational, hypnotically induced, delusional or imaginary pains of any sort.

He pleads with the nervous or mental patient: "Don't talk about symptoms," but "Think health, talk health."

He stresses the importance of good physical health, of the danger of hurry and worry, the advantages of repose.

"Learn to play," he urges. In his talk on "Silence and Relaxation," he rightly declares: "Learn to relax both physically and mentally."

In his chapters on "Headaches" and "Nervous Dyspepsia" he speaks of some of these cases being of directly ideational, habit-formation origin, which is not scientifically possible or true. (See reviewer's paper "How Far Can the Mind Really Influence the Body," in Medicine and Surgery, March, 1918).

The value of sunshine, of cheerfulness in the home, even as radiated from the hangings, rugs and furniture, wall paper, etc., is discussed.

Yellow and red are potentially over irritant and exciting; deep shades of blue, approaching violet, are depressant; and green and light shades of blue are tranquillizing. Hence green and light shades of blue should be favored in the choice of color for household decoration or articles of dress for nervously inclined or irritable, excitable persons.

"Sit straight, stand straight, walk straight" is his advice, especially to the nervous.

Certain common causes of restlessness are enumerated.

In general, then, from the above survey, one can see that Bruce has a really

deep understanding of the so-called neurotic or sensitive person. He realizes that the fundamental trouble is the over sensitiveness, the impressionability or reactivity or irritability—the relative instability. And that the problem is to find the cause or causes, and the diverse means to prevent unrest and secure or gain poise. The methods necessarily vary in each case.

Bruce is to be highly praised for the clarity and directness of his presentation, which the average layman can fully understand.

Every physician, every nervous patient, every normal, healthy person, will find the book of interest and of practical value. It is, except for the reference to habit (ideational) pains, including headaches, and dyspepsia, a safe, sane and reliable book which can be put into the hands of the nervously ill but intelligent patient.

Let Bruce keep up his good work—for he certainly is doing much good by his writings, published so widely and read by such a large audience as is afforded by the Associated Newspapers.

MEYER SOLOMON.

THE EROTIC MOTIVE IN LITERATURE. By Albert Mordell. Boni and Liveright, New York. 1919. Pp. V. No. 250. Price, $1.75 net.

In this volume we have Freudian principles applied to literature by a man whose knowledge and understanding of letters are more than those of an amateur. While Mr. Mordell's grasp of psychoanalytic principles is adequate, it is in his application of these to authors and their works that his judgment and skill are best evidenced. And the result is, to be sure, itself literature, or literary criticism of a high order, rather than a contribution to psychoanalysis: yet it can hardly fail to interest psychoanalysts if only because it shows that Freudian principles work well in the hands of a man of letters.

To any but Freudians the word "erotic" in the title will be a bit misleading, although the Author states (p. 1) that, "the terms 'unconscious' and 'erotic' are almost synonymous." It is with the influence upon an author of his libido that the book deals; and the ego-motive, in any Adlerian sense, is so subordinated to the sexual as to be almost ignored. Egotism becomes "self-*love*." Of this sort, then, there are concise but often carefully documented studies of Homer, Keats, Shelley, Byron, Browning, Swinburne, Cowper, Gautier, Poe, Renan, Dickens, Ch. Bronté, Stevenson, Hearn, and Kipling: with briefer comments on Dante, Petrarch, La Rochefoucauld, Balzac, Nietzsche, Whitman, Tennyson and many others.

Mr. Mordell is a faithful Freudian and with him, as with so many others, psychoanalysis, thought not an exact, is a deductive science. That is, he deduces from facts about authors and their works with the aid of Freudian principles his conclusions; he does not get by induction from the facts any new psychoanalytic principles or new refinements thereof. It is not thus that any possible errors in

the original formulation of the Freudian creed are going to be corrected. Thus it should seem that the principles of repression and the unconscious are being overworked when we read that, "The wish . . . to devote oneself to the following of an ambition or the pursuit of a certain kind of labour, are all symptoms of repressions" (p. 129). Should we, then, except for our repressions, be doing nothing? Furthermore, there are non-Freudian principles that need as well to be taken into account. In the chapter on "Sexual Symbolism in Literature," for instance, several paragraphs on the symbolism of words lack point because the Author forgets that *every* word, unless a proper name, is a symbol, or better, a veritable palimpsest of symbols: and the symbolism is by no means exclusively sexual. On the whole, it is the palliative or curative aspect of literature, as regards both an author and his readers, that is brought out in Mr. Mordell's study.

The Author rather exalts the importance of emotion: and is singularly insistent on the literal reality of what Darwin and others have called "racial memory." "Our psyche never forgets the episodes in the lives of our ancestors" (p. 173). He has unearthed a paragraph of William Hazlitt's in which Freud's theory of dreams is in the clearest terms anticipated. "Freud's work may almost be called a commentary on this extraordinary passage" (p. 32). But one cannot review in detail a work of which every page is interesting. The book deserved more attention paid to small points of grammar and other exactnesses; and it very much needs an index.

Mr. Mordell's "Erotic Motive" is valuable as literary criticism, as a study in the psychology of literary composition and of "genius," and as one of the best applications of psychoanalysis to works of literature.

EDWIN B. HOLT.

RELIGION AND CULTURE. A Critical Survey of Methods of Approach to Religious Phenomena. By Frederick Schleiter. Columbia University Press, New York, 1919. Pp. 193 and Bibliography.

As the title indicates, this volume is intended rather as a critical review than as an original contribution to this extensive subject, one covered by such terms as comparative religion, social psychology, anthropology, and ethnology (in the German sense). The author is mainly concerned with the difficult question of methodology; he discusses the criteria we possess for the interpretation of anthropological data, the principles underlying the various modes of approach, and the most suitable starting points for investigation. These are very complex problems, which can only be discussed in an appropriate place and at considerable length, so that the reviewer will confine himself here to giving his impression of the book as a whole.

One feels that the author, doubtless in the endeavour to be objective, has refrained too much from constructive criticism of the methods he deals with, so that the book consists too much of a series of quotations of one theory and

method after another, and fails to present the organic relations between them in an imaginative way. It serves the purpose excellently well of orienting students as to the main trends of work in these fields, and provides a useful and well-chosen bibliography. That his presentation of these, however, is not always to be depended on may be illustrated to the readers of this Journal, familiar with the dynamic psychology of Freud, by the following passage, where they will be astonished to read that Freud "considers that they (i. e. the traditional principles of associationism—contiguity in space and time, cause and effect, and similarity) constitute a satisfactory explanation of the juxtaposition of psychic content involved in magic. The support of this position by Freud is nothing short of a curious anachronism." As it is mainly Freud's work which has made such a position an anachronism, the comment is distinctly entertaining. The absurdity of a further passage "Freud states that he was led to the use of the term *"Allmacht der Gedanken"* by means of the psycho-analysis of a man who seemed to possess it in a striking way" may be due merely to careless writing, but the author's grasp of the subject is not such as to encourage one to give him the benefit of the doubt on the point. The usefulness of the book is unfortunately marred by its being written in a barbarous German-American which makes it very trying to read.

ERNEST JONES.

BOOKS RECEIVED

The Dream Problem. By Dr. R. V. Khedkar. "Practical Medicine." Delhi, India. Pp. XXX and 371.

Cephalometry of Feeble-Minded. By S. D. Porteus. The Training School at Vineland, N. J. (Pamphlet) Pp. 24.

The Don Quixote of Psychiatry. By Victor Robinson. Historico Medical Press. (N. Y.) Pp. 339.

An Outline of Abnormal Psychology. By James Winfred Bridges. R. G. Adams & Co. (Columbus, Ohio). Pp. 126.

Experiments in Psychical Science. By W. J. Crawford. E. P. Dutton & Co. Pp. IX and 201. $2.

Modern Psychical Phenomena. By Hereward Carrington. Dodd, Mead & Co. XI and 331. $2.50.

Human Psychology. By Howard C. Warren. Houghton, Mifflin & Co. Pp. XX and 460. $2.75.

Our Nervous Friends. By Robert S. Carroll, M. D. The Macmillan Co. Pp. 258. $2.

The Intellectuals and The Wage Earners. By Herbert Ellsworth Cory. The Sunrise Turn. Pp. 273.

The Essentials of Psychology. (Revised Edition). By W. B. Pillsbury. The Macmillan Co. Pp. XIII and 428.

Human Personality and Its Survival of Bodily Death. By F. W. H. Myers. Longmans, Green & Co. Pp. XIII and 307. $2.50.

The Opium Monopoly. By Ellen N. LaMotte. The Macmillan Co. Pp. XVII and 84. $1.

The Problem of The Nervous Child. By Elida Evans. Dodd, Mead & Co. Pp. VIII and 299. $2.50.

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